BRAZIL

In 1909.

By J. C. OAKENFULL.


VENEZUELA
COLOMBIA
GUYANA INGLEZA
GUYANA HOLLANDEZA
GUYANA FRANCESA
EQUADOR
Equador
PERÚ
BOLIVIA
TERRITORIO DO ACRE
AMAZONAS
PARÁ
MARANHÃO
CEARÁ
PIAUHY
PERNAMBUCO
ALAGOAS
SERGIPE
BAHIA
MATTO GROSSO
Planalto de Matto Grosso
GOYAZ
MINAS GERAES
SÃO PAULO
PARANÁ
STA CATHARINA
RIO GRANDE DO SUL
RIO DE JANEIRO
PARAGUAY
URUGUAY
ARGENTINA
CHILE
MANAOS
BELEM
FORTALEZA
RECIFE
BAHIA
VICTORIA
NICTHEROY
S. PAULO
CURITIBA
FLORIANOPOLIS
PORTO ALEGRE
ASUNCION
BUENOS AIRES
LIMA
LA PAZ
Tropico de Capricornio

BRAZIL, 1909.

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By J. C. OAKENFULL.

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CONTENTS.

CHAPTER I. PAGE

INTRODUCTION 5

CHAPTER II.

GEOGRAPHY, TOPOGRAPHY 11

CHAPTER III.

CLIMATE AND DISEASES 19

CHAPTER IV.

ETHNOGRAPHY 26

CHAPTER V.

DISCOVERY AND FIRST SETTLEMENT 37

CHAPTER VI.

THE CAPITANIAS AND STRUGGLES WITH THE DUTCH, BRITISH, FRENCH AND SPANISH INVADERS ... 44

CHAPTER VII.

CROWN COLONY AND EMPIRE 59

CHAPTER VIII.

THE REPUBLIC 73

CHAPTER IX.

AREA, DISTRIBUTION OF POPULATION AND COLONISATION 83

CHAPTER X.

LAWS, CONSTITUTION AND EDUCATION 102

CHAPTER XI. PAGE

COMMUNICATIONS, FINANCE AND COMMERCE ... 113

CHAPTER XII.

NATURAL HISTORY—FAUNA 124

CHAPTER XIII.

NATURAL HISTORY—FLORA 132

CHAPTER XIV.

AGRICULTURE — COFFEE, SUGAR, COTTON, COCOA, TOBACCO 150

CHAPTER XV.

AGRICULTURE—CEREALS AND TUBERS 162

CHAPTER XVI.

AGRICULTURE — TROPICAL AND EUROPEAN FRUITS, VITICULTURE, BEE CULTURE, SERICULTURE ... 171

CHAPTER XVII.

AGRICULTURE—THE PASTORAL INDUSTRY 187

CHAPTER XVIII.

GEOLOGY AND MINERALOGY 195

CHAPTER XIX.

MINERAL WATERS AND TOURIST RESORTS 209

CHAPTER XX.

SCIENCE, ART AND LITERATURE — CONCLUSION ... 223

APPENDIX, BIBLIOGRAPHY, ETC. 232

CHAPTER I.

Introduction.

THE task which confronts the conscientious writer who attempts to deal adequately with such a vast country as Brazil, is so gigantic that he may well pause before undertaking it. The very fact that so many writers have failed to present a satisfactory picture, in spite of their undoubted literary ability, has increased the difficulty of the undertaking. When it is understood by the reader that the Brazilian Republic is an agglomeration of states, with different, and sometimes conflicting interests, that these states are situated in quite different zones, whose climate and productions are as varied as those of Europe and Africa, and that many different factors have been at work to determine the development of character and idiosyncrasy, he may perhaps appreciate the labour entailed on one who wishes to give a truly comprehensive view of the country, its past, present, and future, and its productions and possibilities, as well as some idea of its rulers and public men.

There are many particulars in which Brazil offers a contrast to her neighbours, and racial differences are not the least modifying ones. It must also be remembered that Brazil had an aristocracy, and that its

influence is still to be traced to-day. It may possibly be news to many that the Monarchial element still exists, and has its organ in the press. I venture also to affirm that several of the most highly placed and trusted Brazilians of to-day are still Imperialists to the backbone, but none the less good citizens and ardent patriots.

A casual visitor to Rio de Janeiro or São Paulo, has no proper conception of the native character. If he is a lion, he is hurried through a round of excursions and banquets, and presentations to this or that notability. Probably he is met on the steamer, and personally conducted as it were from one object of interest to another, until the all too brief period of his visit has come to an end, and he flits off to Buenos Aires and elsewhere to go through the same performance over again. During an experience of many years, I cannot remember any really important or observant guest of the nation, who had sufficient time to see more than that which he was especially desired to. Within the last two or three years there has been a procession of celebrities passing across the stage. Their parts have all been rehearsed for them, and (as desired) they have returned home to France, Italy, etc., to sing the praises of the glorious and great Republic. Now I state it as an indictment of the British, that it is many years since an English savant has spent some time in Brazil. In spite of the glowing pictures drawn by Wallace, Burton, Bates, etc., the country is a real terra-incognita to the vast majority of Englishmen. There is no other land under the sun (and I say this without fear of contradiction), that offers so many opportunities to the trader, miner, naturalist, or simple tourist; the mountain lands of Minas, Goyaz, Matto Grosso, etc., etc., are real health resorts, where one meets with no extremes of climate, and encounters

no demonstrations of nature's awe inspiring and all destroying forces.

To come back to the people. One finds outside official life, the surviving aristocrats, as a rule, quiet, dignified, and often striking, looking men, of a philosophic turn of mind. They, like some of the members of the old French schools, speak of the decadence of the country, of the absence of character amongst the younger generation of more pushing business-like Brazilians. There is, of course, some truth in this, but it must be borne in mind that the Republic was, as it were thrust on the people. Like the emancipation of the slaves; a necessary, but badly executed measure, the Empire's downfall was premature. Although the far-seeing Dom Pedro himself foretold its coming, and expressed his conviction that it could not be deferred; it would be quite untrue to say that even now it is one and indivisible. It is very improbable that another revolution (bloodless or otherwise) will take place; that is as regards the central or Federal Government, but of course it is not possible to say that the whole of the states will perpetually own allegiance to the party in power at Rio Janeiro. On the other hand, it speaks well for the acumen of the Brazilian statesmen, when one President follows the course made patent to us in the United States of America of choosing, so as to speak, his successor. To claim that the proletariat elect the chief magistrate would be absurd, and it is a very good thing indeed that it is not so. By this means also the bonds which link the different states together are tightened. A President from Minas, for example, holding that part of the Republic closely to the Union. When we come to examine the constitution we shall perceive the weak points in the armour, and understand the difficulties in the paths of those who

keep the Governmental machine in working order. For the present the subject may be dropped. Let us analyse the man in the street. As a rule he is pretty well informed, and his education is usually superior to that of the average in his class in England. He has a working knowledge at least of French, and his Mecca (like that of all Latin Americans), is Paris. There is even a shop in the gay Lutetia, where one may buy the making of peculiar and distinctively Brazilian dishes. The same feeling that separates the Englishman from his trans-atlantic cousin is to be found in the relations between the Brazilian and Portuguese peoples. Although it is true that the younger branch practically feeds the elder, and that there is hardly a family in Portugal that does not receive periodical sums of money from its members in Brazil, in spite of that the Brazilian, or at least the Portuguese Brazilian, affects a contempt for the Mother Country, that is sometimes engendered by the attitude of the people themselves, and when a relative goes home with his hard earned savings they are ready to devour him. From the moment he puts his foot on shore at the custom house at Lisbon, until he shakes the dust of the land from his feet on re-embarking, it is nothing but beg, borrow, or steal. True, Portugal is so wretchedly poor that her sons are impelled to get money in any way from the fortunate possessor thereof. So the Portuguese who has been some fifteen or twenty years in Brazil, and become naturalised, is a more vehement patriot, than the native born one.

Those who are prone to attack certain petty vices of the Brazilian of to-day, whether European born or otherwise, must again cast their eyes in the direction of the first great American Republic. There are no inherent faults in the Brazilian that one does not find intensified

in the north. Youth cannot possess the calm reflection and staid customs of the mature. Their defects are those of their qualities, and if (as may be devoutly hoped), the Republic succeeds in uniting all its diversified parts into one really homogenous whole; these defects will disappear. A great deal of my belief in the future of this great nation lies in the earnest efforts now being made to educate, *and properly educate*, the people. Where else, for example, could one find the children of a Secretary of State sitting side by side with the peasant's sons on the bench of a public elementary school. The intellect of the people is keen, they are good material to work on, they are (almost without exception) musical. In the few years since their real history began they have produced many men of real scientific attainments, and their literature is rich from every point of view. Without the slightest attempt at flattery I assert that this people are destined to fill the same place in South America, as the United States in the north. Comparing their diplomats, for example, with those from the old European nations, there is nothing whatever in the balance in favour of the latter. The Hague Conference is a case in point, and only one. The annals of the country furnish many others.

Before commencing the story of Brazil in detail it is necessary to remind the reader that the great distances between different parts of the country render it always difficult, and sometimes impossible, to obtain definite information on some subjects. The work of the Official Information Bureau itself at headquarters in Rio de Janeiro, has been hindered by the ignorance or apathy of certain provincial functionaries. This is, of course, inevitable. No need to go further afield than an English country town to discover the obstructive abilities of the

petty parochial dignitary. Taking the disadvantages under which we work in Brazil into consideration, and the newness of everything, I think wonders have been done. It must also be distinctly understood that politics play a not inconsiderable part in the development, or non-development of a nation, and like all the other South American countries, Brazil suffers from the all too frequent changes in the Government. The spoils to the victor is a fundamental law, without a doubt, and it is a melancholy fact that the passion for office is nowhere necessarily accompanied by capacity for administration. I must then ask the indulgence of the critic, in case of any short-comings, and trust that my efforts to marshal an army of facts and figures have been so far successful, and that the book fills a want which undoubtedly exists. I cannot pretend to have made no use of the scissors and paste pot, but claim at least to have borrowed that which is useful, and done my best to make of many parts a reasonable whole, added to, and altered where necessary in conformity with the needs of to-day, and more especially of to-morrow, for it is of the future that I have been especially thinking whilst compiling this work; to the future we must look, and in the future hope.

The most important thing to remember is, that whatever shortcomings are discoverable in this little work are due entirely to two things. One is the fallibility of the writer, and the other is the certainty that no one can satisfy every critic. With this truism I am content to leave my compilation in the hands of the reader, hoping that I have at least succeeded in disarming any prospective antagonist.

CHAPTER II.

Geography and Topography.

Almost the whole of Brazil is in the Southern Hemisphere. It attains its greatest demensions between the Equator and the Tropic of Capricorn. The only South American countries which are not in contact with it are Chili and Ecuador. The significant result is, that of all the southern Republics, the only one openly and firmly friendly to Brazil is Chili. A long chapter on political economy might be penned taking this statement as a text, but this is neither the time nor the place to enter into international questions.

The Atlantic Ocean forms the natural boundary on the east and a greater part of the north, for an extension of about 5,000 miles, from Cape Orange, frontier of Dutch Guiana, to Chuy on the boundary line of Uruguay. The number of degrees from north to south are about 37, and between Pernambuco, on the eighth parallel south of the line, and the Cardillera of the Andes there are as many east to west, or a distance of 4,350 kilometres. In area, Brazil is nearly sixteen times as large as France, and excluding Alaska form the United States, she is the fourth largest country in the world. A most remarkable fact may be noted, viz.: that there are few natural harbours or bays of a great size, those of San Salvador (Bahai) and Rio de Janeiro being by far the most important. To make up for this, however, the river system is a magnificent one. Americans are proud

of calling the Mississippi the father of waters, but its volume is far less than that of the Amazon. This gigantic stream freshens the waters of the ocean for a distance of at least 180 miles out. It is (as is the Paraguay) navigable throughout its course. The latter river rises in the state of Matto Grosso, not a great distance from the head waters of the Tapajoz, the last great affluent of the Amazon on its course to the sea, but, unlike that river, its course is almost due south from its source to its junction with the Paraná, at the point where Paraguay touches Argentina. The Paraná, itself rises in the range of mountains (known by its name) which forms a natural boundary to the State of Goyaz, on the east. These mountains also contain the source of the Tocantins, which falls into the sea by Pará, whilst further west in the same state springs the Araguayá, which joins the Tocantins at the junction of Goyaz with Maranhão and Pará on the north. The Madeira river, from the Bolivian Acre (now Brazilian), and on the northern bank of the Amazon, the River Negro, are the other two important tributaries of the great stream. Coming eastward we find the Parnahyba between the Maranhão and Piauhy, and then there are no more considerable streams till we encounter the São Francisco, which rises in southern Minas Geraes, and wends its way right through the central part of that state, and Bahia, before turning eastward, and taking a tremendous leap of 286 feet at the falls of Paulo Affonso, and so to the sea at Sergipe. We have now only to consider the comparatively insignificant Jequitinhonha. From central Minas to the coast at Belmonte, and the Parahyba, which forms the western boundary of the State of Rio Janeiro. Where Argentina, Paraguay and Brazil meet, and the Iguassú join the Paraná, we find

one of the world's wonders, the seven falls of the latter. The Iguassú itself is noteworthy for a vast semi-circle of cascades, the largest of which is 200 feet high. There are several other rivers which empty themselves into the Paraná, as the Paranápanema, and Rio Grande, and the Tieté flowing through the city of São Paulo. These, together with the Uruguay (bounding Rio Grande do Sul State on the north and west), all rise in the coast ranges, or in their offshoots, on the Atlantic side.

We have then a vast network of streams watering almost the whole of Brazil. The volume of some of the principal rivers gives a somewhat clear idea of the enormous extent of territory through which they wend their way, and the sketch map at the beginning of the book will demonstrate their relative position and course.

Amazon, basin 3,356,400 square miles, length 3,380 miles. This does not include any part of the river extra Brazilian.

Northern Affluents.

Rio Negro,	basin	429,000	sq. miles,	length	1,020	miles.
Japurá,	,,	186,000	,,	,,	2,779	,,

Southern Affluents.

Javary,	basin	45,600	sq. miles,	length	573	miles.
Juruá,	,,	144,000	,,	,,	1,200	,,
Purús,	,,	233,200	,,	,,	2,190	,,
Madeira,	,,	637,600	,,	,,	3,000	,,
Tapajaz,	,,	258,300	,,	,,	1,158	,,
Xingú,	,,	237,000	,,	,,	1,260	,,

The Tocantins is 1,560 miles, the Araguary 1,080 miles, the São Francisco 1,820 miles, and the Jequetinhonha 680 miles long.

Supposing one wished to travel by water from Cuyabá in Matto Grosso, to Manáos on the Amazon, the distance would be from Cuyabá to Rio Janeiro, via River Plate and Monte Video, 3,242 miles, Rio Janeiro to Manáos, 3,204 miles, total distance 6,446 miles, and it would be necessary (at present) to allow at least six weeks for the journey, which would be performed in Brazilian steam-vessels the whole distance. It might, however, be possible in a very wet season, to go by canoe (with perhaps a little portage), from Cuyabá into the Amazon direct. The voyage might thus take a third or a fourth part of the time.

By looking at the map, one may see that there are very few spots indeed in Brazil that are not well provided with water. The natural source of most of the rivers seem to be the central plateau, and the majority flow either south or north from the States of Matto Grosso and Goyaz. As we have already remarked, a narrow mountain chain forms the watershed in many cases of two rivers whose course is widely divergent. Thus we may call Brazil, a country of many mountains. This is due naturally to the erosive influences of the rivers thoughout the ages, dividing and multiplying the mountain ranges. We shall observe a curious instance of this, if we turn our attention to the Serra da Sincora, in the State of Bahia. The river Paraguassú has with its feeders separated that range into three or four distinct sections, confronting each other.

More than half of Brazil consists of an elevated plateau cut into by a vast number of rivers. The mean altitude is from 2,000 to 3,000 feet, with isolated ranges up to 7,000 feet, and one peak (Itatiaiá) reaching over 9,000 feet. We find the highest summits along the eastern side of the country, near the sea, and in the centre forming

three long chains separated by the basins of the São Francisco and Paraguay rivers. Thus the elevation of the land is by no means commensurate with the length and volume of the rivers, and it may perhaps be safely asserted that the accidence of the topography is responsible for the extent of the fluvial system.

There are then, four quite distinct mountain ranges:—

(1) The Andes, and their offshoots, in which nearly all the great tributaries of the Amazon find their sources, in territory extra Brazilian.

(2) The ranges which separate the valleys of the Amazon and the Orinoco, and which divide Venezuela and the Guianas from Brazil.

(3) The central plateau, rising in vaious localities, into elevated peaks. This covers the greater part of Matto Grosso, Goyaz, central and western Minas and São Paulo, Pernambuco, Piauhy and Maranhão, and forms the watershed of the Paraguay, Paraná and Uruguay rivers on the one side, and of the lower tributaries of the Amazon on the right bank, and of the Tocantins, and the branches on the left hand of the São Francisco on the other.

(4) The coastal ranges, extending from the São Francisco river on the north, to the southern part of the State of Rio Grande. Here we find the sources of all the minor streams that discharge their waters into the Atlantic, as far south as the River Plate basin. These ranges are practically unbroken. There are no extensions of plain or wide valleys intervening. Here and there they approach quite close to the sea, in the vicinity of Rio Janeiro and Santos notably, and

lower down they recede, leaving a wide alluvial strip in the State of Rio Grande, and in the north, in Bahia (at Cannaveiras) a boggy district, but in general the line is more or less parallel to the coast, and like it, shows no very great tendency to become broken or undulating.

The coastal range is however divided into three distinct parts. The first called the Serra do Mar, is very near the sea, and lies principally in the States of Espirito Santo, Rio de Janeiro, S. Paulo, Paraná, and Santa Catherina. In the State of Rio it is partly bounded on the west by the Parahyba river, which forms a natural limit in this direction. Its highest point is Itatiaiá, considered to be the culminating peak of the Brazilian mountain system. There are many different figures given for its altitude, but 9,000 feet is as near as possible. To the northward of the city of Rio, a short spur (separated from the rest by the Piabanha stream) is known as the Serra do Orgãos (organ mountains). Here, within 40 miles of the capital of the Republic, we find a mean altitude of 6,500 feet, with one or two summits (Itaassú) reaching 7,000-7,300 feet. The massive of the latter peak is noteworthy for being isolated on the east from the main range of the Organs, by tremendous precipices. At Theresopolis (2½ hours from Rio) we find the finger-like peaks, which give their name to the range. The southern half of the Organ Mountains is known as the Serra da Estrella, and reaches in the Cortico (near Petropolis, two hours from Rio) about 4,500 feet, or some 2,000 feet above the valley, in which lies Petropolis (the summer residence of the well to do). Behind Rio Janeiro itself we find the Corcovado, (hunchback), 2,200 feet. The Tijuca, 3.400 feet, and more to the north, an isolated mountain of somewhat different

formation to the surrounding peaks. It is called Tinguá, and gives its name to some curious mineral found in nodules, and known as Tinguáote. Its origin has been presumed to be volcanic, although no crater can be said to exist now.

The second range (Mantiqueira) lies in the States of S. Paulo and Minas Geraes. At Itatiaiá, or near it, it becomes allied to the Serra do Mar, thus this mountain may be said to belong to two systems, as it may be stated to be in two distinct states. Like the Tinguá, it is of a different nature to the others in its vicinity, being composed mainly of later eruptive rocks, such as syenites and phonolites. The crest of this Mantiqueira Range lies at an average of 6,500 feet above the sea, thus forming the most dominating and imposing mountain chain in the east of South America. Its direction from the valley of the Tieté is N.E. generally, contrary to that of the third section of the system, the backbone of Brazil, as it is called (Espinhaço), which trends N.W. This latter forms part of the eastern edge of the São Francisco basin.

The most important mountains in the Mantiqueira, beside Itatiaiá, are situated near the pass by which the central railway makes its way westward at Barbacena. This little city has an altitude of about 4,000 feet, and may be termed the gate of the mineral district.

In the Espinhaço Range we find Itacolumí (near Ouro Preto), 5,700 feet, Caraça, 6,300 feet, Piedade, 5,800 feet and Itambé, 6,000 feet.

In Goyaz we find the Pyrenees, attaining, it is said, nearly the height of 8,000 feet, and the Serra da Canastra reaching 4,200 feet.

The Paraná Plateau (Campos Geraes) extends into Santa Catherina and Rio Grande do Sul, and thrusts out

spurs into Minas and São Paulo, and its maximum height is about 4,000 feet, with a mean level of some 2,000 feet. The broken series of mountains to the west of the São Francisco in Minas and Bahia, attain some 2,500 feet.

It should be noted that the triangulation of most of the peaks in every state, but São Paulo and Minas, has not been completed, and that in consequence most of the *old* maps are topographically incorrect.

CHAPTER III.

Climate and Diseases.

It is impossible to speak of the climate of Brazil as a distinct concrete thing. The country is so immense, and its topography, as we have seen, so varied, that it has at least three different zones. Generally speaking, we find that the latitude in Brazil has hardly anything to do with its climate. Of course, it is naturally warmer (on the coast) in the winter at Pará, than it is at Rio Grande, but the maximum summer heat is quite as great in all probability in the latter state. The average temperature of Pará is 26° centigrade, or 78° Fahrenheit. In spite of this rather high percentage (owing to the absence of winter, as far as loss of solar heat is concerned), the death rate is only 20 per thousand per annum. To show how figures prove misleading at first sight, we may note that Rio de Janeiro (within the tropic of Capricorn), has a maximum temperature of about 37° centigrade (98° Fahrenheit), whilst Buenos Aires (11 degrees further south) has a maximum of 105° Fahrenheit (shade). In the summer in this Argentine city, one cannot sleep at night owing to the heat, whilst in Rio de Janeiro, however hot the day may be, the nights are always agreeable. How can one account for such apparent anomalies? To understand the reason for this, one must consider the question of winds, and therein lies the secret of the relative healthiness of places lying well within the tropics, and in some instances almost on the line itself. We shall now pro-

ceed to deal systematically with the three different zones into which we propose to divide Brazil. It may be safely concluded, in fact boldly asserted, that the climate of Brazil, generally speaking, is quite suited to European colonists, whether from the north or south, and any government warning its subjects to the contrary acts either in blind ignorance, or stupid antipathy, with some reason for its calumny which may not be very difficult to ascertain.

The average temperature of the first, or tropical zone, is 25° centigrade, 77° Fahrenheit, but it must be divided by its relative humidity into three parts. (1) The upper Amazon; (2) the interior of the States of Maranhão, Pará, Matto Grosso, Piauhy, Parahyba, and Pernambuco; and (3) the coast line itself.

In the first region, the season of rains is from February to June. From the middle of October till January, there is a modicum of wet weather, and from July to October, and January to February, the weather is dry. The temperature rises and falls rapidly in some parts of the Amazon valley. Now and then the thermometer has marked only 51° Fahrenheit. Although the day may be too hot, as soon as the evening approaches, the influence of the breeze is felt. Agassiz noted that a peculiarity of this climate was the almost continual action of a wind blowing from east to west. Maury said: The rains falling abundantly during some months are invigorating. It is very rare that the wind becomes violent. There is between the Amazon region and India, for example, the same difference as between Rome and Boston, U.S.A. The two cities are situated in the same latitude, but their climates are, of course, very different. It must not be supposed that the average minimum of 64° Fahrenheit, and maximum of 98° Fahrenheit is uniform all

over Amazonia. In the elevated parts of the state, frosts have been observed, and the climate may be considered as temperate. At a contest in Paris, in 1898, between 1,200 children, the first prize for healthy appearance and physical development was given to a boy who had been born in Manáos, of Amazonian parents. Longevity is common. An authenticated case is chronicled of a man who lived to 145 years. Malarial fevers, found in some zones in the valley, are identical with the Italian forms, and in the Campagna of Rome are far more dangerous and difficult to cure.

The dangerous parts of the Amazon valley are limited to a very small section indeed of the country. There are 204,000 square miles of territory where, to quote Bates (naturalist on the Amazon), the climate is glorious. According to Hartt, part of the plateau has the best climate in the world, and one finds in the Campos Geraes, at least 600,000 square miles of lands well suited to stock raising, and even the cultivation of such cereals as oats and barley, as well as wheat.

Wallace says: "The temperature is marvellous, and the nights are noteworthy for the balsamic perfumes wafted through the air."

Herbert Smith wrote: "I have travelled through Amazonas during four years, without the least touch of fever. There are no sunstrokes ever known in this country."

Orton says: "Pará is an invalid's paradise."

Bates says, further, "that Englishmen who have lived 30 years in Pará, conserve the same aspect, and the same freshness of colour as they had when they left their native land."

The extension of this first zone may be calculated as from the second degree north of the line, to the tenth

south. With regard to its diseases, there are *none* peculiar to the country, and certainly none which are not more the result of carelessness or unhygienic habits than of climatic or topographical defects.

Manáos is only some inches above the sea, and Pará about 22 feet, yet, surrounded as it were by water, they present the following remarkable figures.

	Lat.	Absolute max. temp.	Absolute min. temp.	Death rate per 1,000.
Pará ...	1.27	91° (Fahr.)	66° (Fahr.)	20.2
Manáos ...	3.8	97° „	64° „	

Compare this with Madras, mortality 58.7; Bombay, 48.6; Mexico, 48.5; Lima, 34.7; Cairo, 34.6; Calcutta, 34.4.

The second division comprises the interior of the Northern States of Brazil. The prevailing winds are from the N.W. and from the S.E. They are now warm and humid, now dry and cold, causing variations in the temperature of as much as 68° Fahrenheit. In the month of August the day temperature has reached over 90° Fahrenheit, whilst at night the thermometer has gone down to 44° Fahrenheit. However hot the weather may be, the wind and the rain cause it to sink rapidly. The dry season lasts about two months, with, at most, two days' rain during this time, but an exception must be made of the States of Ceara, Parahyba, Piauhy, and Rio Grande do Norte, where the dry season sometimes extends to three or four months. The climate of the plateau of Matto Grosso is exceedingly healthy, the water is excellent, the air dry, and the temperature mild. There are no endemic diseases. Although this zone is within the torrid zone, frosts are frequently seen during the winter. There are also many parts of the States of

Parahyba, Pernambuco, and Piauby, where the average temperature does not exceed 68° Fahrenheit. It must also be particularly noted, in comparing such a temperature with that of Great Britain, for example (of about 50° Fahrenheit), that the latter is greatly reduced by the low winter ratio. Presuming that in England we had winters such as in the South of France, the mean temperature would not be much less than that of the whole of Brazil. The maximum heat encountered in London is quite as high as Rio de Janeiro (or even Pará, with a difference of 50 *degrees of latitude.*)

The extension of this zone may be reckoned from 10° south of the Equator, to the line of Capricorn, 23½° south (about), comprising Sergipe, Bahia, Goyaz, Espirito Santo, Rio de Janeiro, Minas Geraes, almost all Matto Grosso, and the western part of São Paulo.

The third zone is to be calculated from the tropic of Capricorn to the southern frontier. It must be divided into two parts, the first comprising the coast line of part of Rio de Janeiro, São Paulo, Paraná, Santa Catherina, and Rio Grande du Sul, where there is an average temperature of not more than 66° Fahrenheit. The climate along the whole of this zone, and indeed much further north, is very equable. The Serra de Mar, being very steep on the Atlantic side, and covered with luxuriant and dense vegetation, right up to its summits, or to within four or five hundred feet of them, attracts the rain and retains humidity. The highest point attained by the mercury at Rio Janeiro, shut in as it is by high mountains, is quite 6° lower than at Paris. If we take the train northward, after crossing the bay at Rio, we shall find in two summer resorts, one 3,250-ft. above the sea, has a mean temperature of 60° Fahrenheit, with a maximum of about 89° Fahrenheit, and a minimum, July-August, of perhaps 28° or 29°.

The other, situated 2,500-ft. above (and so near Rio that the city may be seen from the summit of the pass in fine weather), has a mean heat of 64° Fahrenheit, a maximum of 91°-92° Fahrenheit, and a minimun of below freezing point. Novo Friburgo, situated some little distance further on another line, is 2,845-ft. in altitude, and has a mean annual temperature of 62° Fahrenheit, a maximum of 75° Fahrenheit, and a minimum which marks freezing point. The salubrity of the capital itself is unquestionable, being about as low in death rate as Paris and Berlin. Santos is now quite healthy, and yellow fever may be said to have *entirely disappeared* from both cities. The greater part of the States of São Paulo, and Southern Minas, and the higher parts of Rio Janeiro, as well as all the land still further south, is subject to frosts during some weeks of each year, but of course the days are delightfully fine and invigorating. The wet season is usually from December to April, but at the beginning and end of it, the rain frequently comes on after three or four p.m., and although it may pour in torrents all night, the morning is gloriously fine. Warning is generally given of the approach of a wet spell, by a week or two of oppressive heat during the day. After a good storm, the air is crisp and invigorating, and one feels impelled to get out and up the hills. I should hardly imagine that there is a more agreeable climate, than that of the mountain resorts during the winter (April to September). It is hardly possible to say there are more than two seasons, as flowers are blooming in profusion all the while, and one need never complain of either the heat or the cold. Last year there was an influx of new diplomats, and it was rather amusing to notice their complaints about the weather. They said they had not come to Brazil to be chilled to the backbone. To sum

up, there is no doubt that in many towns of the interior, the mortality is not so great as in similar places in Europe, indeed in some cities, as Ponta Grossa, in Paraná, there are years without a single death. St. Hilaire, in speaking of this region, says, "There is no place in this world where an European might establish himself with greater advantage." The words of our own savant (Wallace) will prove a fitting termination to the unanimous chorus of appreciation. In Brazil a man may, with six hours of labour, obtain more of the comforts and necessities of life, than by twelve hours work in Europe. The adventurer has nothing to fear. The death rate of this vast country will bear comparison with any other. Medical science is undoubtedly as far advanced there as anywhere, and as far as sanitary hygiene is concerned, Brazil took first prize at the great international congress recently held in Germany. Personally speaking, I would far rather be in the most despised Brazilian city in the interior, than in a provincial European town.

It may be a recommendation or not, but within the short space of time of three years in the mountains I gained not less than two stone in weight, in spite of the most active life, passing at least half my time, either in the depths of the virgin forests or attacking the most difficult peaks, sometimes marching 16 and 18 hours a day.

CHAPTER IV.

Ethnography.

KEANE divides the aboriginal Brazilians into four great groups, or families, namely, Cariban, Arawakan, Gesan, and Tupi-Guaranian. The physical features of the country closely connect themselves with the inhabitants, but there is no correspondence between the configuration of the interior, and its political divisions. Both the racial constituents from which the American type was developed appeared in Brazil. The later neolithic Mongolian immigrant, who came by way of Behring Strait, represented advancing peoples probably more numerous than their Pleistocene predecessors, and also possessing a much higher development. Survivals of this type would, therefore, seem as if they should be more widely scattered, and distinctly marked, when compared with the ruder, fewer, or less formidable men. There is, however, no doubt about these Brazilian Proto-Mongols. As Burton remarks, this strain demonstrates itself in big, round Calmuck skulls, flat faces, with broad, prominent cheek bones, oblique oriental eyes, rather brown than black. They have also dark, thick eye-brows and thin moustaches fringing large mouths, with pointed teeth, and sparse beards, hardly covering the long, pointed chin. Variation through vast ages of wandering, produced another sub-race. It

came to the southern continent when the climates of the far north were much milder, and there were no spaces of open sea between Scandinavia and Greenland. These (the first arrivals in all probability) were scattered widely over the country, principally due to the pressure exerted by the hordes of invading Asiatics. They seem to have become more or less concentrated in Minas Geraes, and it is supposed that this state is the centre whence subsequent migrations took place.

In the new world these stout, dark men, with narrow skulls, receding foreheads, flat crowned incisor teeth, and projecting jaws, form a separate group that was exterminated, absorbed, or driven into remote and isolated regions. Keane supposes them to have held their own for some time against the invaders, but according to the scientific dogma of Von Virchow, prognathism is not compatible with normal intelligence, and, therefore, this stand could not have been of long duration.

Tribal catalogues and philological analyses will go but a very little way towards bringing these groups into view as they are. Information contributive towards this end is very unequal with respect to different families, while for all of them the constant intercrossing, wandering, regrouping, and decay, have done their work in the way of modification and destruction. Whole populations have vanished, leaving hardly a trace behind. In others they have been so broken up, that their very tribal names and original languages have been entirely lost. The mode of their life, in very small communities, continually sub-divided by the slightest dispute or difficulty, was a very potent factor in their disappearance. Mirhanas, for example, is an arbitrary title for a multitude of indistinguishable ethnic fragments, including about half of the Indians in the valley of the Amazon.

Carayas is a term similarly applied to those in the basin of the Tingú and Araguaya Rivers. Those Indians called Coroados are so termed, because of their tonsures. Botucudo means one who wears a botogue or labret (an ornament of shell or bone inserted into the lip).

Tapuyo, originally signifying stranger or Carbarian, is now synonymous with a savage well disposed towards foreigners. Caribs cannot be traced beyond Central Brazil, where they appear to have originated. Although these latter had a reputation as warriors, the fugitive slaves, fighting by their side, far excelled them.

Carijones, with Witotos, on the Amazon, are also affiliated to this group, as are likewise some scattered bands of Penientaires roaming the borders of Pernambuco and Piauhy. The manners and customs of these tribes were (and are) so dissimilar that it is easy to understand how it is they never formed a real nation, and even to-day do not advance a single step towards civilisation, unless taken in hand by the white man. It is supposed that the flat heads found in certain regions of the plateau are derived from unions between the conquering Europeans and the Caribs. The Arawaks of Guiana call themselves Loconos (or natives). They are widely distributed in Brazil, but their origin is impossible to discover. Like many other groups, the tribes are hardly more than large families, each under its own elder. They are, contrary to the Caribs, very cleanly in their habits. They have adopted many European articles, whilst the latter live in filth, and reject all foreign improvements. There is, however, an offshoot of the Arawak group (Warrans), possessed of much ability in canoe construction, and having the virtue of thrift, but indescribably dirty in their ways. The Carib distorts his limbs by ligatures, uses the labret, arrays himself in

feathers, skins, and hand-made fabrics, whilst the Warran seems to be entirely destitute of personal vanity, is more stolid than his neighbours, and not being so well developed physically, hard work soon exhausts him. Both these loosely connected hordes build temporary huts of branches of trees, and wherever the Warrans are permanently established, they construct pile dwellings.

All of these races living in the wide river basins are in the habit of proceeding to the most extravagant excesses. These orgies are, of course, succeeded by periods of morose, surly depression, culminating in destructive impulses. Primary traits having a true value for classification purposes, are more marked amongst the Gessan than in any of the other families inhabiting Brazil. They had this name from Von Martius, who took the common terminal of tribal names for a collective designation. This individuality(Botucudo, as Kean calls it), in large measure, escaped the process of evolution, which created a distinct American type out of entirely different elements coming from opposite quarters of the globe. They preserve those characteristics which distinguished their paleolithic European progenitors. When taken en bloc the mental inequality shown by divergent branches of other stocks, is here scarcely recognisable in varying degrees of aptitude, more or less skill or ingenuity, and an unequal response towards incitements that initiate progress. Gessan tribes have hardly become modified, they remain undeveloped, and no group of this family is otherwise than completely savage.

Caribs, Arawaks, and Tupis are sometimes indistinguishable. Structural survivals cut Aimores or Botucudos off from these, and closely unite them with proto-Europeans. Kayapos, Akuas, Cholengs, Kames,

and several minor hordes representing a single group, extending from Amazonia to La Plata. These are true aborigines, fragments of a mass broken up by Tupi-Guarani invaders, and the nearest representatives, and probably the direct descendants of that primitive race whose osseous remains have been found in the Lagoa Santa caves, and Santa Catherina shell mounds.

Boutcudos, Tapuyos, Capayos, etc., in Eastern Brazil, have not even reached the stone age, but although on the great Solimões one may travel for weeks without seeing a fragment which might be worked, every tribe within this latter region, has contrived to remedy the deficiency. Botucudos use wood almost exclusively, and until lately were without hammocks, and lived entirely on such poor provision that badly equipped hunters could supply; their diet consisting of every kind of insect or reptile that might by any stretch of the imagination be termed edible.

Such tribes as Chicriabas, Akroas, Apinages, and Charentes (Akuas) are, like many others, cannibals, and have been known to eat their own dead children, friends, and relatives, as well as prisoners of war. Enemies killed in battle and devoured were supposed to impart whatever courage they possessed to their devourers. The Botucudos hunt men as they do other creatures, killing members of neighbouring tribes for food, whenever other supplies run short. Marital relations are only temporary, and of the lowest order. Women have no position or influence, and receive neither consideration or mercy. During long expeditions on occasion they accompany their lords as beasts of burden, whilst the latter stalk magestically in front, carrying their weapons. Usually, however, the women remain at home to perform the duties common to their sex, as well as to do

what primitive planting and harvesting is customary to the family. Tupi-Guarani tribes are distributed by Deniker, over the plains of the Amazon and Orinoco, and in Guiana, and on the table lands of Eastern and Southern Brazil. This is a composite group, as indicated by its name, although the difference is largely geographical. Their ethnical constituents are, in fact, similar, but the Guarani branch are presumed to have come from Paraguay. It may be remarked in this connection that this country is full of the Guaranis to-day, the bulk of the menial service being performed by these Indians, so much so that it is frequently necessary for employers to learn Guarani in order to make themselves understood, even in the capital (Assumption). Early missionary priests constructed a sort of lingua franca, which by degrees came to be known as Tupi, although the real language of the Tupis had originally a great range, covering about one-fourth of South America. Tupi communities, purer in blood, and far more powerful than now, or at any rate much more numerous, were established on the Amazon itself, and all its branches. At present each has dwindled, and, except along the Solimões, it is impossible to find an unamalgamated population.

These groups, in common with most others, crossed in all directions, have mingled foreign strains amongst themselves, until by far the greater proportion are now Mamelucos (descendants of aborigines and white men); Mulattos, Cafuzos (crossed between Negroes and Indians), Curibocos, who combine Cafuzo with Indian blood, and Xibaros, the progeny of Cafuzos and Negroes.

Bates uses the term Tapuza for what he calls semi-civilized Tupis. Properly speaking none have reached this degree of social development, although in some

instances there has been a greater or lesser adoption of civilized appliances. At certain places aborigines, or at least barbarians, masquerade as cultivated Christians, but this is all outside show. The savage remains at bottom.

When Cabral reached Brazil he found Guaranis established from Paraguay to Uruguay, in Southern Brazil, and already united to Tupis. They were without clothing of any kind, although they used some personal decorations, which have since been abandoned. Nadaillac reports them as living in commercial settlements, usually consisting of four long houses built in a square.

Tattooing and scarification is still common, and they paint themselves with red and black designs, and use the labret.

The nearly disorganised low caste Tupi families keep up hereditary feuds, plunder, and murder whenever opportunity occurs, avoid any contact with foreigners, and despise their inventions. They are not to be confounded with the main branch of the group, as they are allied to the Caribs, or degenerate Arawaks, more than to the real Tupi. They may be distinguished as Indios bravoes (savage Indians). It is extraordinary what confusion arises, as hardly an Indian group throughout Brazil, but has some isolated families, outcasts, as it were, living under conditions far different to those of the rest of the tribe.

This country exhibits every kind of stone implement, from the rudest paleolithic wedge, to finely-shaped arrowheads of rock crystal, and the polished neolithic axe. There is no possibility of explaining why Botucudos use wooden arrow tips when plenty of shells, stone, and metal are at hand, or why Caribs, Arawaks, and Tupis often prefer stone to iron.

The Gessan tribes advanced less than any others, and accomplished nothing representing the lowest degree of human life in communities. An average Botucudo hut is a rude bamboo erection, about 7 feet high and 9 feet wide. The openings are barely large enough to crawl through, and the interior is black with soot. Bugre settlements consist of a few of such structures standing in partial clearances in the forest, and every trace of ordinary decency is banished from their surroundings. Bigg-Wither, prospecting amidst rubbish heaps, found bones of all kinds of animals, including monkeys, that had been slain by a creature more like a simian than a man. These Indians are not more than 5-ft. 4-in. in height on an average, and their lower limbs have generally grown crooked. They cut off their coarse, black hair in front, and ornament it with Toucan feathers, stuck on with wax. Every Bugre pulls out his eyebrows and eyelashes, and pulls down his under lip with a huge appendage, besides ornamenting himself (if fortune be kind) with a necklace, composed of rows of teeth; their bows and arrows are very inferior, and a kind of snare made of creepers, is more effectual against big game. They still carry stone axes, counterparts of those used in prehistoric times in Europe. Attempts to civilise these wretched beings have generally proved entirely in vain, and of 27 taken prisoners by Mr. Bigg-Wither, all except one boy died of a mysterious complaint, in spite of washing, clothing, and proper feeding; or in all probability, because of these improvements in their condition and appearance.

Near the coast the Lingua Franca (or Geral) predominated amongst the tribes who had made their way thither from the central plains. Those Indians who have come into enforced and continual contact with the white

man, are generally docile, but taken as a whole it is very difficult to inculcate habits of order and cleanliness in them.

A peculiar characteristic of the whole of the Indian races is a deeply seated superstition. They believe in lunar phantoms and beings of light, who are spirits of good. They are afraid of certain dark shadowy forms, powers of ill, vengeful, and awful, whom it is necessary to propitiate. These are supposed to be the souls of their ancestors. They also believe in spirits of the deep waters, and were afraid of bathing in the dark, except in company, as traditions are current that many had been dragged down into the lakes and rivers, and never returned. A little reflection would have taught them the real tangible cause of the loss of their fellows, as alligators are naturally very common in many parts of the country. In common with other primitive races, their natural powers of observation are very highly developed. Many of the tribes are capable of producing artistic ceramic ware, and they have some ability for wood-carving, and making grotesque masks. Some of them plant maize and mandioca, weave baskets, and construct large canoes, of course, by the hollowing out process, aided by fire. Amongst the River Indians harpoons are used, which are fitted with heads that become detached on entering the fish or manatee, the shaft acting as a float. The tradition of a flood is current amongst them. It is related that the Chief Tamandaré, on the rising of the waters, took his wife in his arms, and climbed up into the crown of a palm tree, there he remained for three days and nights, until the flood began to recede. The palm, which had become uprooted, had floated into the middle of a plain, where it stopped, and Tamandaré descended, and saw that all other humans

had perished. He remained on the spot with his wife, and originated the great Guarani race, who were, like unto him, mighty and tall men.

There were many legends circulating amongst this people, and they were in the habit of sitting round their camp fires to listen to a tale-teller, sometimes the whole night through. The dominating note in these stories, and indeed in the whole character of the people, was melancholy. They were (and are) a very musical people, and it is remarkable to notice how Brazilians to-day are devoted to melody. Hardly a town of the slightest pretensions, is without its band of music, in spite of the great cost of instruments (all, of course, imported). Many of these orchestras are quite good, and we find *free* schools of music established in the most unlikely places. Undoubtedly the aboriginal character is preserved amongst the white people now inhabiting Brazil. Traces are found of its influence in the mode of celebrating the carnival, in the very character of the national music, in its literature, and sometimes its art. The Negro, on the contrary, has not made himself felt to any great extent, of course, owing to his thraldom, as well as to his natural characteristics. The evolution of the Brazilian type is proceeding slowly, but surely, and out of the Sclavo-Teutons, Ibero-Tuscan-Romano, Franco-Iberians, Syrians, and remaining aboriginal elements, is being constructed a composite, but none the less virile race, destined to play a great part in the future history of the world. The predominance of the white is assured. Colonisation is the predominant question of the day, and although such experiments as the introduction of Asiatic settlers (Japanese) are somewhat dangerous ones, there is no doubt as to the final result. Envy and ignorance may work hard to stay the progress of Brazil, but her

advance to the position of a great nation is sure, and even now she demands and obtains a prominent place in the world's councils. Who knows what the future holds in store for the "Colossus of the South," as she may fitly be termed.

Even as this goes to press, I am instructed that immigration should not be forced, and I am obliged to delete three articles from the new Colonisation Law, in order not to paint too glowing a picture of what our Government will do for newcomers of the proper sort.

CHAPTER V.

Discovery and First Settlement.

At the beginning of the 16th century, Portugal was in the throes of transition from the middle ages to the modern era. The Church had lost many of its powers, and was obliged to relinquish a number of its pretentions. Its political force was a thing of the past, except through the astuteness of the prelates. The power of the Throne had greatly increased. The desire for expansion, stimulated by the triumphs of Bartholomew Diaz (1486), and Vasco de Gama (1498), had turned men's eyes in the direction of the new world. The time was ripe for further discoveries, and the rivalry between Portugal and Spain served as a greater stimulus. Times were hard, and laws severe, death was the penalty for such crimes as robbery of a mark. Moreover, the King was the absolute lord of his people. He could make war, and force the people to provide for themselves whilst fighting his battles. The animals, carriages and vessels of his subjects were all his, the roads, rivers, ports and port dues, minerals and fisheries, all belonged to him. Small wonder then, when Brazil offered oprortunities of greater riches and freedom, that the Portuguese flocked thither.

The geographical position of Portugal destined her people to a maritime life. Arabian traditions speak of the Mogharriun adventurers from Lisbon. The expedition against Ceuta, in 1415, consisted already of several hundreds of vessels. The first European who can be

said to have cast eyes on the southern half of the new world was Vicente Yanez Pinzon, a Spaniard of Palos (Murcia), and one of the companions of Columbus. He sighted Cape Augustine (as it is now called), some twenty miles to the south of Pernambuco, on the 26th of January, 1500. Before Pinzon reached the limit of his voyage (the mouth of the Amazon), Portugal had despatched Pedro Alvarez Cabral, and in spite of his intention of following up Vasco da Gama, he was forced by calms and contrary winds, so much out of his course that, on the 25th of April, he sighted Brazil in about the 10th degree of latitude, close to where Alagoas is to-day.

The entire squadron (13 vessels) dropped anchor on Good Friday in a harbour, which was given the name of Porto Seguro, and is four leagues north of the place actually called so. Cabral established friendly relations with the Indians, and after sending home a small caravel to convey the news of his discoveries, set sail again en route to India, on the 2nd of May.

When the tidings reached Portugal, the King, Don Manuel, immediately fitted out three ships, and invited the Italian, Amerigo Vespucci, from Seville, to take charge of the expedition. The little fleet left in the middle of May. 1501, and reached land in latitude 5° south, and sent two of their party on shore to negotiate with a group of natives they saw congregated on a hill. Several days passed without the return of the sailors, and another was sent. Women came forward when the messenger reached the shore, he was surrounded by the Indians, who seized and examined him with evident curiosity and wonder. Suddenly another woman came behind him with a stake and dealt him a blow which brought him to the ground. Immediately he was dragged away, and the men amongst the party rushed down to the beach and

discharged a cloud of arrows at the sailors remaining in their boats. Several guns were fired at the savages, who then fled to the woods. The barbarous Indians cut the poor youth's body in pieces, and boiled it within sight of his enraged comrades, who would have landed to revenge their three fellows if they had been permitted. Disheartened at the non-success he met with, Amerigo returned to Lisbon in 1502, but set out again with six ships the ensuing year. Four of the caravels were cast away owing to the incompetence of their commander, but the other two reached All Saints Bay (Bahia), where they remained five months on friendly terms with the natives, and then returned home laden with parrots, monkeys and Brazil wood, leaving behind them twenty-four men who had been saved from the wreck of the flagship (at Fernando do Noronha Island). Thus was formed the first settlement in Brazil.

The Brazil wood had become so noted in Europe, that the name which Cabral had given to the country (Vera Cruz) became lost in the denomination which it universally received of the Brazils, or the Brazil wood country, finally becoming Brazil simply. The harmony which marked most of the first intercourse between the aborigines and the discoverers did not continue for very long. The former found little reason to be satisfied with their neighbours, and, like most savages, passed from the one extreme of attachment and veneration, to that of hatred and fear, and their minds were soon filled with the idea of taking revenge for some provocations which they had sustained. Warfare of the most sanguinary sort succeeded, and the Portuguese were frequently defeated, and suffered such tortures that cannot be related. A temporary end was thus put to voluntary emigration to Brazil. At this crisis the Government adopted the

plan (borrowed by the English at a latter period) of making the country a penal settlement. Banishment thence taking the place of capital punishment. Owing to the character of the new colonists, the Indians naturally lost all awe for those whom they at first regarded as vastly superior beings to themselves. Hardened by crime, and rendered desperate by their circumstances, the new comers were well fitted to contend with the difficulties that awaited them. In the sanguinary battles that ensued, atrocities were committed not unsurpassed in enormity by those which attended the conquests of Peru and Mexico. It was said to be their practice on storming a village, to massacre all the old men and children, and carry the rest off as slaves. During this time, Amerigo Vespiecci had returned to the service of the Castilian King, and undoubtedly counselled the latter to take possession of the territories which he (Vespucci) had discovered. The Spanish Sovereign sent out Don Juan de Solis in 1509, with Vicente Yanez Pinzon as pilot. The King of Portugal did not act tardily in remonstrating with the Castilian on this proceeding, and on return of Solis and Pinzon, the idea was abandoned.

Seven years later, De Solis, coasting along the Brazils, came to the harbour of Rio de Jeneiro. From thence he proceeded southward until he reached what he presumed to be a strait communicating with the Indian Ocean. but which turned out to be the mouth of the great River Plate. With this important discovery, the career of the great navigator terminated, for in attempting to make a descent on the coast, he and several of his crew were slain in sight of the ships. Discouraged by the loss of their commander, the survivors set sail for Europe, without attempting any further discovery. The King of Portugal claimed their cargoes, and remonstrated so effectually

against the interference of Spain that Magalhaes, when reaching the coast three years afterwards (1518), purchased nothing but necessary provisions from the inhabitants. Meanwhile the French had formed settlements on the northern coast of Brazil, and when Christovão Jacques, a Portuguese commander, entered All Saints Bay, he found two Gallic vessels laden with Brazil wood. These he attacked and succeeded in destroying, after a gallant defence. The first settler in Bahia was Diogo Alvarez, a native of Vianna do Castello. He was wrecked upon shoals on the north of the bar. Part of the crew were drowned, others were slain and devoured by the Indians, and Diogo himself only saved his life by making himself useful to the savages. By design he secreted a musket and barrel of powder, and when an opportunity offered to astonish his masters, he promptly brought down a bird with a shot. He was in a moment translated from a slave to a great personage. The Indians gave him the title of Caramurú (man of fire). He became a chief, led his followers against the Tapuyas, and the fame of his terrible engine of war having preceded him, his tribe gained a bloodless victory. He fixed his abode upon the spot where Villa Velha was afterwards erected, and living as one of the patriarchs of old, soon saw a numerous progeny rising round him. It is undoubtedly true that the best Bahian families owe their origin to him.

At length a French vessel entered the bay, and Diogo Alvarez resolved to take the opportunity of once more seeing his native land. He loaded the ship with wood, and embarked with his favourite wife Paraguassú. They were received with great honour at the French Court. His wife was baptized by the name of the Queen of Portugal (Catherina), and the King and Queen were

her sponsors, her marriage was then celebrated. Diogo would have proceeded home, but the French would not permit him. By means, however, of a young compatriot (Fernandez Sardinha), he sent the information to Lisbon that he was not permitted to carry personally, and exhorted the Portuguese Monarch (João III.) to colonise the province in which his own lot had been so strangely cast. After some time, however, he bargained with a wealthy merchant to take him back, and leave him the artillery and ammunition of two ships, together with a large store of useful goods for trading. In return for this he undertook to fill the vessel with Brazil wood. The arrangement was faithfully performed on both sides, and Diogo fortified his little capital. The Portuguese Government had continued to neglect their Transatlantic possessions, and for more than 30 years the attempts to colonise it had been of the feeblest description. Finding, however, that the French were profiting by their apathy, and that the Spanish were forming settlements on the bank of the Paraguay River, the Portuguese Court took alarm, and a plan was formed for the division of the country into Capitanias (captaincies), each containing about fifty leagues of coast, which were bestowed by João III. upon such grandees as had distinguished themselves by their services to the crown, and were able and willing to embark on such an adventure. They were either to go in person, or send colonists at their own expense, and in return they were invested with complete powers, both civil and criminal, over their respective jurisdictions. We thus see that the policy of the Portuguese King and Cortes was the same as that of the Spanish, i.e.: to colonise and enrich the nation at the expense of the people, not of the royal treasury.

Before proceeding with the next chapter in Brazilian

history, the parcelling of the coast into a series of semi-independent communities, we will glance at the actual state of the country at this time. The first arrivals found no difficulties in procuring wives amongst the Indians, as the latter had a peculiar ambition to possess children by a race of men whom they at first deemed a sort of demi-gods, when they saw them apparently call down the thunder and lightning at the pointing of a sort of wand. Besides, according to their ideas, the only side of parentage worth anything was the male. They were further seduced by the store of trinkets, such as looking-glasses, scissors, knives, rings, etc., which were profusely displayed by the mariners. On the other hand, of course, the new comers brought no women with them on their first voyages, and so it is easy to understand that a large number of mezticos soon sprang up wherever the Portuguese were settling. Some of these became quite as savage as their mothers, and forgot their partial white origin in the primeval instincts of the Indian. Others assisted in the brutal massacres of their relatives, and were even more ferocious than their fathers. An intermediate type is presented in Diogo Alvarez, and being the first, as well as one of the best kinds of colonists, it is small wonder that the little port he founded soon rose to be the capital of all Brazil. From the time of his shipwreck (1510) to 1557 when he died, progress was slow but never failin .

CHAPTER VI.

The Capitanias and Struggles with the French, British, Spanish and Dutch Invaders.

The first person to take possession of a Capitaina was Martim Affonso de Souza, who, with his brother's aid. fitted out a considerable expedition. He first began to survey the coast near Rio de Janeiro, and gave the place its name, being discovered on the first day of the year, and thought to be the mouth of a river. This allotment was situated near São Vicento. Pedro Lopez, his brother, had two sections, one part, São Amaro, immediately to the south of São Vicente ; the second considerably to the north, not far from where is now Pernambuco. João de Barros, the celebrated historian, obtained Maranhão, and Pernambuco became the portion of Duarte Coelho Pereira. The territory adjacent to the Southern Parahyba River, was conceded to Pedro de Goes. The country between the River São Francisco and Bahia was allotted to Francisco Pereira Coutinho. The next portion of territory southward was known as the Captaincy of Ilheos, it was granted to Jorge Figueiredo Correá. Cabral's Porto Seguro was included in the range of coast which formed the Capitania of the same name, and came under the control of Pedro Campo Tourinha. Espiritu Santo was the appellation given to the next in rotation. and fell to Vasco Fernandez Coutinho.

Few of the settlements were founded immediately by the Crown, and the lords proprietors enjoyed feudal privileges and most regal rights, except issuing a coinage. They made their own laws and imposed taxes. This system of Government was, as might have been expected, attended by serious evils. An authority so absolute, and so uncontrolled, was inevitably abused by the adventurers to whom its administration was entrusted. Complaints of their brutal and arbitrary conduct became at length so frequent that it afforded the Crown a fair pretext for revoking the powers which had been so hastily conferred on the proprietors, and *de facto*, the settlements had been entirely alienated from the Government.

A Governor-General was appointed with plenipotentiary attributions, and the only thing left the adventurers was possession of their lands as fiefs.

Thome de Souza, a fidalgo (or noble), was appointed to this high office, and he was given instructions to build and fortify a city, which was to be called São Salvador. He arrived at Bahia in April, 1549, accompanied by six Jesuits, the first who had set foot in the new world. It should be noted that the introduction of slaves had already taken place, most of them brought from the West Coast of Africa, and were principally of Bantu Race. They came especially for the purpose of agriculture, but were made use of in the extraction of the precious metal, and as we shall afterwards see, entered into the whole life of the country at a later period.

Amongst the Jesuits was father Nobrega, a contemporary of St. Francis Xavier, and his rival in disinterested exertions for the good of his fellows. He has been truly called the Apostle of Brazil. Of noble birth, he had been disappointed in some position looked for, and renounced the world in disgust, little thinking that

his future was destined to be far greater than as a simple and useless aristocrat. His memory deserves to be held by the Brazilians in everlasting honour.

Some have ascribed the appointment of Thome de Souza to other causes than that of the misdeeds of the feudal lords. Many Jews had found their way to Brazil, being banished thither by the inquisition, after having been stripped of all their possessions. Here they founded a colony, imported sugar-cane from Madeira, and soon were so flourishing that the Crown became imbued with the idea of forming a new city in Brazil, and making it the seat of Government. The Jews had hardly been a year exiled when the new Governor arrived, so it can hardly be said that they were the cause of his appointment.

On De Souza's arrival at Bahia he found old Caramurú settled there. This man was of great assistance to the Portuguese in promoting a friendly understanding between them and the Indians, and the latter helped them to build the city. Within four months a hundred houses were erected, a cathedral was begun, batteries were made, commanding both sea and land, and a mud wall was built to defend the place against any sudden attack from the natives. Supplies of all kinds were received next year from Portugal, and the year following several young orphans of noble families were sent out by the Queen as wives for the officers, with large dowries in cows, mares, and slaves.

This was the very first royal settlement, and its prosperity was attended by advantages to all the Captaincies. De Souza did not, however, bring a sufficient force to cope with the disorders and repress the insubordination which began to prevail. By building São Salvador he gave a Central Government to the colony, but the

honour of settling and extending it, and of making it really useful to the Mother Country, was reserved for the Jesuits.

These men, by their arts of insinuation and address, have been surpassed by none, and they dispersed themselves amongst the savages, and seemingly inspired by peace and charity, succeeded in obtaining their attachment and confidence. The obstacles which they had to encounter were most formidable, but their fiery zeal and assiduity rose with the difficulties met with, and the most salutary effects resulted from their exertions. They began by instructing the native children in the Portuguese language, and thus whilst fitting the Indians to become interpreters, they acquired their tongue, and, as we have seen, formed a Lingoa Geral. Nobrega had a school near the city, and the children were taught the elements of reading, writing, and arithmetic, to assist at mass, to sing the church service, and were frequently led in procession through the town. Great pains was taken to substitute the folk lore of the Indians by legends from holy writ, and as to these poor people it was only a case of exchanging one set of stories by another, they did not lose by the substitution. Unfortunately for posterity, through this policy, most of the Indian lore has been entirely lost.

The greatest obstacle in the path of the missionaries was the cannibal propensities of the Indians. Their very pride and beliefs were implicated in these horrid orgies. In spite of their curing the savages of drunkenness, of polygamy, and of the custom of the vendetta, the latter still possessed the propensity to delight in human flesh. Southey (History of Brazil) relates a story of a Jesuit, who having administered extreme unction to a very old Indian woman, desired to know whether he could get her

anything to eat. Said the old convert, my stomach rebels against everything, but if you could only get me the little hand of a tender Tapuyo boy, I think I could pick the little bones; but woe is me, there is nobody to go out and shoot one for one. The priests, who were already established in the country, were in continual opposition to the Jesuits. Their interests were at stake; for what the missionaries did gratuitously they demanded payment, for the priest maintained that slavery was lawful, because the Indians were beasts, although their own manners were not less dissolute than those of the savages, and they hated the Jesuits, who sought to humanise the natives. The first settlement consisted of an array of officials, directly responsible to the Governor-General, and who were deputed to visit the Capitanias to transact the business of the Crown; four hundred soldiers, six hundred exiles, and many mechanics, and others.

Hardly had the place taken the aspect of a permanent settlement when the first Bishop (Don Pedro Fernandez Sardinha) arrived in 1552. The following year Thome de Souza, having been four years in Brazil, asked for and received his recall, and was succeeded by Duarte de Costa, who came, accompanied by Father Anchieta and six other Jesuits, who soon after established a college in the Plains of Piratininga (now São Paulo) on the Tieté River, in a secluded and beautiful spot. Southey, on visiting it, complained of the tremendous ascents, and the thinness of the air, although its elevation is not more than about 2,500 feet above sea level.

Difficulties arising between the new Governor and the Prelate, the former embarked for Lisbon, with the intention of stating his grievances to the King, but was wrecked, and, together with a hundred Europeans, was murdered by the Cahete tribe of Indians. In revenge

Launch of the Brazilian Battleship "Minas Geraes," largest and most heavily armed war vessel in the world.

Botucatú, Soracabana Railway, São Paulo.

for this the Portuguese hunted them until they were almost all exterminated, the remainder being condemned to perpetual slavery.

Da Costa was replaced, in 1558, by Mem de Sa, a man of enlightenment and humanity. On his arrival he immediately set to work to reclaim the natives, and to make them fully understand that they might expect justice in the future, he issued an order that all who had been wrongfully enslaved should be set at liberty. He also took vigorous measure to enforce the laws against cannibalism, pursuing and chastising such tribes as were found to continue the abominable practice. He soon had to turn his attention to a foreign enemy. Durand de Villegagnon, a native of Provence and Knight of Malta, a man high in the French naval service, had taken possession of one of the islands in the bay of Rio de Janeiro, for the avowed purpose of founding an asylum there for the persecuted French Huguenots. For this project he had obtained the patronage of Admiral de Coligny himself, and by this means had succeeded in inducing a number of respectable colonists to make their way to Brazil. The French Court was inclined to view the scheme with entire satisfaction, as it afforded a means of forming colonies after the fashion of their Iberian neighbours. Villegagnon having landed, he began to build a fort, calling it after the name of his protector, Coligny, and although the whole territory was hardly a mile in circumference the continent was already honoured with the name of Antarctic France. On the return of his ships to Europe for another cargo of Protestants, a considerable zeal was kindled by the establishment of the reformed religion in these remote regions, and the Church of Geneva took such interest in the expedition that two clerics and fourteen students from that city determined

to brave all the hardships of a new climate and mode of life.

Repairing to the seat of Admiral Coligny, they soon found their numbers swelled, and new recruits being continually enrolled as they made their way towards the sea. Their departure was hastened by a disagreeable adventure. At Harfleur the Catholic inhabitants, instigated by the priests, rose in arms against them, and one of their best officers was killed. On their passage they met with very bad weather, and on arriving off the Coast of Espirito Santo they had a slight brush with the Portuguese. Finally they reached the settlement of their countrymen at Rio de Janeiro, where they were received at first with great apparent cordiality. But Villegagnon was a scoundrel, he soon threw off the mask, and those who had come so far to enjoy liberty of conscience, found themselves brought under a worse yoke than that which they had previously suffered from. They, therefore, demanded permission to leave Brazil, and he gave written permission to the captain of a ship to convey them to France. When they got on board, however, the vessel was found to be in such a state that five of the party returned on shore, rather than put to sea in her. Jean de Lery was one of the others who thought death better than the cruelty of the traitor Villegagnon, and they pursued their voyage, and after having endured the utmost miseries of famine they reached Hennebonne. They had been forced to devour the leather coverings of their trunks, and hunted the rats and mice until none remained. Several died of hunger, and the frightful thought came to them that they would have to draw lots and devour each other. Villegagnon had given them a box of letters wrapped in cloth, and amongst them was one addressed to the chief magistrates of whatever port

they might arrive at, in which this worthy servant of the Guises denounced the men whom he had invited to Brazil to enjoy the peaceable exercise of the reformed faith. His devilish malignity was, however, frustrated, and his treachery exposed, as the authorities at Hennebonne happened to favour the Protestants. Of the five who had trusted to his tender mercies, three were executed. Others fled to the Portuguese, and were compelled to profess a religion which they despised as much as they hated.

The attention of the Portuguese Government was soon directed towards this fine port, and the nephew of Mem da Sa was sent to Bahia, for such assistance as might enable him to extirpate the French, and take possession of the place. An expedition was fitted out accordingly of two ships of war, and several merchantmen and the Governor himself took command, and was accompanied by the Jesuit Nobrega. Early in January, 1560, they reached Rio de Janeiro. The intention of the Governor was to enter in the dead of the night, and effect a landing by surprise. They were, however, seen by the sentinels, and in consequence obliged to anchor off the bar. The French retired to their forts with a company of eight hundred native archers.

Mem da Sa now saw that he needed small craft, and sent to São Vicente for aid, and for men who had some knowledge of the harbour. When reinforcements arrived the Portuguese won a landing, but they vainly battered the solid rock fortifications for two days and nights, and uselessly spent all their ammunition, besides having many of their men wounded. There was no lack of courage amongst them, though they had evinced little skill, and in a desperate assault they won the largest of the outworks, then stormed the rock which hid the

magazine. This so intimidated the French that they abandoned the other works in the ensuing night, and fled, some to their ships, and others to the mainland. As this action took place on January 20th (St. Sebastian's Day) Mem da Sa called the place São Sebastião, in honour as well of the young King of Portugal, who bore that name. Here the city was founded, and the whole of the work of construction was performed by the Indians, under the control of the Jesuits, without any expense to the State. The troubles of the Governor were not at an end, however, for he had now to contend with the most formidable and savage of the Indian races, the Botucudos, who were continually attacking the outlying settlements in Bahia, and even threatened the capital itself.

English adventurers were at this time making endeavours to settle themselves in the country, and they fixed themselves in some considerable numbers at Parahyba do Sul. Allying themselves with the natives they might have succeeded in becoming a serious menace to the Portuguese, had not Mem da Sa attacked and exterminated them. This successful administrator had been in control of the colony for an unusually long period, when Dom Luiz de Vasconcellos was appointed to succeed him, and brought out a new concourse of Jesuits, headed by F. Ignacio de Azeredo. Nearing the Azores they met with several French and English vessels. The new Governor was killed in action, and the Jesuits made to walk the plank by a French pirate, named Jacques Sore. Only one escaped in a lay habit. Nobrega had spent his last breath before, prematurely worn out, and thus was spared hearing the sad fate of his brethren. Luiz de Almeida being appointed Governor, he reached Bahia, and was welcomed by Mem da Sa, before the

latter's death (1572). Later, when Luiz de Brito took the place of De Almeida, the growth of the colony had been so rapid that it was found necessary to divide it into two distinct parts, each with its own head. These were, however, re-united in 1578, under D. Diogo Lourenzo da Veiga. This coincided with the passing of Portugal and Brazil under the Spanish Dominion for sixty years, owing to the death of the Portuguese King, and his chief nobility in a memorable expedition against the Moors. The colony was offered to the Duke of Braganza, with the title of King, provided he forfeited all claim to the Portuguese Crown. Neither Phillip of Spain, in making the offer, nor Braganza, when he refused it, had any conception of the importance of the country and its destiny. Little either dreamed that the then insignificant colony was fated to eclipse Portugal itself, and to furnish an asylum to the Court in two hundred years time. In spite of the search for gold and precious stones that had been going on for twenty years, very little intimation of the real riches of the interior could have been given then, or probably the fate of Brazil would have been quite different.

Bahia, Pernambuco, and Rio de Janeiro were in a most flourishing condition at this time, and would doubtless have made far greater progress had it not been for the temporary placing of the power in Spanish hands. Phillip had too many affairs to consider at this time to bestow proper attention to Brazil, and his subjects were filled with dreams of the better known El Dorado, on the Western Coast. This was also undoubtedly the reason why the attempts of the Earl of Cumberland, under whom Raleigh served, and Cavendish, and Sir James Lancaster were fated to produce no lasting results, although their filibustering expeditions were temporarily

crowned with success. At this time Roberto Diaz, a colonist who had discovered a great mine of silver, and who lived in such magnificence, that everything used at the table or the toilet was of the precious metal, offered to disclose the secret to King Phillip, on condition he was made a marquis. The crafty Castilian was not willing to comply with this suggestion, but sent out emissaries with instructions to discover the mine. In spite of his offers to show as much silver as there was iron in the mines of Biscay, it was not forthcoming. The Governor-General set out with some miners for the Serra Itabayana (Bahia), but could discover nothing, and only the timely death of Diaz saved him from the vengeance of the King. The probability is that he had, in common with many of the old colonists, amassed his fortune through other means. The exploitation of the Indians was a vast source of riches. In two years no fewer than 80,000 arrived on the coast, in the neighbourhood of the capital, to be employed in the sugar mills, etc. Almost the whole of these died in a very brief space of time, and were replaced by Negroes. Astounding stories are still (1908) current as to the means employed by the first settlers to enrich themselves at the expense of the natives, and when these failed, by traffic in black ivory.

In 1611 the French renewed their efforts to form a settlement, and established themselves until 1620, in the Island of Maranhãs. The Dutch now turned their eyes in the direction of Brazil, and in 1624 the West India Company fitted out a considerable armament under Jacob Willekins and Peter Heyne. Their instructions to attack the capital were completely carried out, and Bahia was taken almost without a struggle. The Hollanders soon set to work to strengthen the place, and prepared to renew hostilities, which were conducted with

the greatest barbarity on both sides. The Portuguese Bishop, Marcos Teixeira, hoisted the crucifix for his standard, and commenced guerilla warfare with such success that São Salvador was soon blockaded. He died shortly after, in consequence of the hardships he had undergone, but his successors carried out the campaign. The Dutch were weakened by the return of Willekins to Europe, and the departure of Heyne, as well as by the loss of their General, Hans Vandort, who was killed in ambush. In 1626 the Spanish King sent forty ships and 8,000 soldiers to retake the place, under the leadership of Fabrique de Toledo, and the Dutch capitulated on condition of being permitted to return to Holland with their personal belongings and arms. New attempts were made by the Holland West India Company, but the enormous expense delayed an expedition. They, however, harassed the Spanish and Portuguese merchant fleets on their homeward voyages, and in thirteen years took 546 vessels, the proceeds of which amounted to £7,500,000.

Early in 1630 Admiral Hendrick Lonck appeared off Pernambuco, and took the place after a feeble resistance on the part of Albuquerque, the Governor. A predatory warfare, with the aid of the Indians, was carried on by the vanquished, but in three short months they had to accept defeat, and were transported to the Dutch Indies. Disaster overwhelmed every fleet sent out by the Portuguese to recover the lost city, and in 1636 the Dutch had made themselves masters of the Provinces of Pernambuco, Parahyba, and Rio Grande do Norte, in reality the whole of Brazil lying northward of the São Francisco River.

These successes inspired the Dutch with the hope that they might, by a great effort, complete the conquest of

Brazil, and Count Maurice of Nassau, arrived at Pernambuco with fresh troops, and made himself Master of Sergipe and Ceará. His entire force at this time amounted to 6,180 European soldiers, and about 1,000 Indians. His efforts to reduce the capital were unavailing, and in 1639 Spain despatched 46 ships of war, and 5,000 troops under Mascarenhas. Half the fleet was lost, and the rest arrived at São Salvador in a melancholy condition. Mascarenhas was, however, enabled to raise a total force of 12,000 men, and proceeded against Pernambuco. The result of an engagement lasting three days was the total defeat of the Portuguese, and of that mighty armament, but six ships returned to Europe. Negotiations took place, and hostilites were suspended for some time.

In 1640 Portugal regained her independence, and in 1641 an alliance was concluded between the Dutch and the Portuguese, marking the limits of the territory of each in Brazil.

The West India Company now recalled Count Maurice, and a large number of the troops, and the commissioners appointed were foolhardy enough to sell to the Portuguese vast stores of ammunition. Their conduct became besides so intolerable that peace was not possible for any length of time, and it was left to the colonists themselves to finally expel the invaders in January, 1654. The Portuguese Crown received its Empire of Brazil from the hands of the patriot, Fernandez Vieira, and although desultory attempts were made by the Dutch to regain a footing in Brazil, they were speedily obliged to relinquish all pretentions to dominion.

The 10th of August, 1661, a treaty was signed, by which the whole of the country was finally ceded to Portugal, on payment of 8,000,000 florins in 16 instal-

ments, and free commerce being allowed Holland in all commodities, except Brazil wood. The Portuguese now appreciated fully the value of their possession, and João IV. conferred on his heir apparent, the title of Prince of Brazil.

In 1710 a French squadron, under M. du Clerc, arrived off Rio de Janeiro, and an attack on the city was made. After a short but desperate struggle the Portuguese were victorious, and massacred all who fell into their hands. Du Clerc himself taken prisoner, was murdered in his bed. Next year France sent her great Admiral Duguay-Trouin to inflict vengeance on the Brazilians, and he led his fleet daringly between the lines of batteries which defended the city, and carried it by storm, holding it until a heavy ransom was paid. Thus ended the last attempt to wrest Brazil from the hands of her discoveriers. During the two hundred years that had elapsed since the first settlement, the opening up of the Sertão (as the interior was called) proceeded slowly. Most of the settlements were due to the discovery of gold and precious stones, and the convenient course of the rivers provided a highway easily accessible. The State of São Paulo (as it is now) was prominent in the work of pioneering. Groups of adventurers (bandeirantes) forced their way over the serras, in search of slaves. They marched under a chief who was completely equipped with the fullest power over his subordinates, and a priest was an obligatory member of the band. Montaya speaks of these wolves in sheep's clothing whose office was to Christianise the natives, whilst the others despoiled them. Making use of the poor Indians for all the purposes of beasts of burden, and for every kind of labour, by this means the bandeirantes made their way into Minas, Goyaz and Matto Grosso, and linked up the

great plateau with the Amazon. Those of the 16th century devastated the whole basin of the Tieté, and the districts to the south and south-west. By 1610 the Jesuits established in Paraguay, had extended their work by the Uruguay, Paraná, and Iquassú Rivers to the Paranapánema (Paraná). In spite of the unspeakable barbarities perpetrated by these bandeirantes, it is undoubtedly true that credit is due to them for opening up the country. Many of the Paulistas never made their way southward again, remaining in certain favourable spots, and forming the beginning of future prosperous cities.

CHAPTER VII.

Crown Colony and Empire.

In 1699, the first great discovery of gold took place, and was followed, 30 years later, by that of diamonds. Amongst the other charges made against the Jesuits, was that they had found the precious metal in many places, and were working it by slave labour, without giving the Government its share. The missionaries at first were of serious, earnest character, and entirely devoted to good works, but little by little they became contaminated by the greed of their lay neighbours, and were gradually losing their influence, and being hated by the people. On Sebastião Joseph de Carvalho e Mello becoming Prime Minister, he determined to remove them. They were the only persons whom he feared, and the great multitude of clericals, and the continual conflicts between them, gave him an excuse to expel those whom he considered the propagators of intolerance, ignorance and superstition. The priests were let alone, as they were good servants to the Crown. One of his most legitmate ambitions was to lessen the influence of Rome. The future Marquez de Pombal was 50 years of age when he entered into his ministry. He found the country in a state of decay, largely due to the pernicious influence of the clerics over the Court and the people, and he resolved to purge Portugal of as many of its most undesirable elements as possible. It was said of him by his enemies that he acted first and thought afterwards,

and persisted in his plans whether they were right or wrong. It is possible that he had not at first conceived the thought of extinguishing the Jesuits, but when events arose which seemed to render such a measure necessary, he pursued this scheme with characteristic perseverance. His brother, Xavier de Mendonça Furtado, was appointed Captain-General of Maranhão and Pará. He used all his influence to deprive the missionaries of their authority, and finally, in 1760, they were expelled from Brazil. Their colleges, churches and other property was confiscated. They were sent home under inhuman conditions, by which many died, and others were cast into prison, to remain there for eighteen years, until, on the disgrace of Pombal, they were set free.

Brazil suffered many injuries at the hands of this tyrant. He granted licenses to a number of exclusive companies, and ordained that their stock should bear a certain price, and in order to enforce this regulation, decreed that the script should become legal payment. In 1762 the Spanish Governor of Buenos Aires, seized on Colonia, a port on the opposite side of the River Plate, and it never fell into the power of the Portuguese again. The following year the Conde da Cunha, on being appointed Viceroy of Brazil, was instructed to take up his residence at Rio de Janeiro, which being more convenient to the mines, and to the River Plate, had become of much greater importance than Bahia, and presented a more secure and easier defended port. From this period down to the emigration of the Royal Family from Lisbon, the development of the country was uninterrupted, in spite of the exactions of the Crown. In 1704, the Brazilians got the better of the Portuguese in the municipal elections, and in 1708, 1710 and 1720, revolts occured in São Paulo, Pernambuco, and Minas Geraes

(as the mining province was now called). The conduct of the home Government was little calculated to soothe the Brazilians. The colonists were taxed for the benefit of Portugal, as heavily as they could be. The Brazilian capital was filled with a tribe of functionaries and other Portuguese, who found life much more agreeable in Rio than in Lisbon. The appearance of a printing press was the signal for an order from the Court for its destruction, and every means was taken to prevent the fostering of a national spirit. In 1755 and 1758, laws were passed forbidding the enslavement of the Indians, and by others in 1761, 1767 and 1776, the introduction of Negro slaves into Portugal, including Madeira (which formed part of the Reino, or Kingdom), as well as the Azores, was prohibited. No mention was made of Brazil, where the number increased rapidly. After the establishment of the capital, in Rio de Janeiro, when the population of the city exceeded 30,000, the coffee berry was introduced into the country, and many other kinds of industries were stimulated, all of them, however, depending for their profits on the supply of forced labour, which was increased by every means in the power of the colonists.

The revenues obtained by Portugal from Brazil at this time were very great, one fifth of the production of the gold and diamond mines going to the Crown. From 1728 to 1734, this amounted to an average of nearly £500,000 yearly, and, with the many other iniquitous taxes, reached an annual sum of not less than £2,000,000. All goods imported from the Mother Country paid 12 per cent. duty. Salt and iron were taxed 100 per cent., and most of the impositions were farmed out to the highest bidder. Every article introduced into the mining districts was surcharged 2d. per lb. In passing ferries, goods paid not according to their value, but their weight.

No trade of any kind was allowed between the natives and the British, although the latter often found means to evade the vigilance of the fiscal agents, who, on their side, frequently found it worth their while to turn their backs when any contraband trade was going on. Under such circumstances the development of the country was retarded, and the aspirations of the Brazilians for freedom could not be realised, owing to the sparsity of the population and difficult communications. At the beginning of the nineteenth century, Brazil is said to have contained 12 cities, 66 towns, and 430,000 inhabitants of pure blood, as well as some 1,500,000 Negroes, and 700,000 Indians. These figures are as near as can be obtained from various sources, but, of course, are quite liable to be somewhat erroneous. The colonies were however outstripping the Mother Country, and the exports had reached £2,500,000, and the imports £2,100,000. Twenty thousand slaves were being annually imported, and 5,000 were sold in the market at Rio de Janeiro. Many of these poor wretches were the property of the Crown, 10,000 being employed in the diamond fields. Others were attached to convents, the Benedictines having 1,000 on their plantations. Social life at this time was of the most degraded kind. The habits of the lower orders were filthy, and those of the rich abominably vicious. The monks swarmed in every street, and were at once sluggards and libertines. For the sum of two dollars, any coward could hire a bravo to waylay and stab his enemy. The Negro population were employed in every description of labour, both agricultural and domestic.

It was the custom of a man who had 20, 50 or 100 slaves, to turn them loose in the morning without a crust, and compel them to produce a sum of money at night.

Any surplus they might keep for themselves. Builders used to impose a further condition that each Negro should bring back with him a large stone suitable for construction. If one hired a mechanic for any trifling work about the house, he would bring a slave with him to carry his tools. In my lady's chamber would be found a group of females ready to peform her slightest behest. Events had been hastening to a crisis, in Portugal, since the beginning of 1807, and on the 29th of November, the Prince (João VI.), who was Regent, hastily embarked on board the squadron of Sir Sidney Smith, with his retinue and all the valuables that could be got together. He reached Bahia on the 25th of January, 1808, and was joyfully welcomed by the people. He was persuaded to stop there, but with praiseworthy firmness, he adhered to the resolution he had taken, and after spending a month in the city, sailed to Rio de Janeiro, where he arrived on the 7th of March.

The great Marquez de Pombal had forseen the future necessity of transferring the seat of the Monarchy to Brazil. The first beneficial consequence of the arrival of the Royal Family, was the opening of the ports to international commerce, and the centenary of this was celebrated by a great national exhibition last year (August to November, 1908), at Rio de Janeiro. In the very first year, 90 foreign ships entered the new port, and many visited Maranhão, Pernambuco, and Bahia. In 1810 a treaty was concluded with England, which gave a preference to British goods, these paying 15 per cent. duty, whilst commodities of other origin were taxed to the extent of 24 per cent. Gold and silver, however, still continued to be prohibited. Santa Catherina Island was declared a free port, and privileges were granted to employ the splendid woods of the Brazils for the purpose

of constructing British men-of-war. Before 1814, a number of English merchants took up their residence at Rio, and the place soon became a great commercial centre, and later, the seat of a British plenipotentiary ranking higher than his colleagues elsewhere in South America.

The abrogation of the colonial laws, which took place soon after the arrival of the Regent, the introduction of the vine, and the encouragements given to improvements in horticulture, the adoption of vaccination, and better sanitary laws, and some reform in the courts of judicature may be enumerated among the benefits for which Brazil is indebted to the residence of the Court. The most vital stimulus in promoting improvement, and in forming a national character and feeling, arose out of the decree which gave to the country equal rights and privileges to those enjoyed by Portugal herself. The important declaration of this measure was fixed for the Queen's birthday, in December, 1815. The new title of the King's possessions was the United Kingdom of Portugal, Brazil, and the Algarve. When the merchants of Rio met to congratulate their Sovereign, they subscribed a large sum of money to form a fund for general education. Schools multiplied, and even the slaves were sent to learn to read and write. The classical languages began to be taught, and public libraries were established at Rio, and Bahia, and printing offices throughout Brazil. A botanical garden was opened at Pernambuco, a medical college at Bahia, a museum, a school for engineers, and a naval college started at Rio. In 1821 the Cortes invited the Regent (now King) to return home. The invitation was couched in such language as might have been considered minatory, but it was coupled with the information, or pretext, that the English were about to take possession of the country.

Valley das Antas, Rio Grande do Sul.

Cutting and transporting Sugar Cane, São Paulo.

Tobacco Plants.

The truth was that they were jealous of the rising influence of Brazil, and to mark their displeasure, ordered the schools and other institutions in that country to be closed, and the central Government at Rio to be dissolved. A manifesto issued by order of the Cortes bore the significant phrase: "Commerce and industry seemed entirely destroyed by the unlimited license granted to foreign vessels in all the Brazilian ports, and by the fatal treaty of commerce with England." On the 18th of February, 1821, the King nominated a commission to consider the Constitution, the clauses of which had been promulgated in the Mother Country.

Shortly afterwards, the Prince Dom Pedro read to the people of Rio a royal proclamation, securing to them the Constitution, such as it should be framed by the Cortes at Lisbon, and ended by taking the oath to observe it. His example was followed by the Governors of Pernambuco, Bahia, etc., and the King confirmed all that had taken place. Having resolved to return, João VI. embarked on the 24th of April. As soon as he arrived in Europe, he found himself in the hands of his Cortes, and found it necessary to lend his authority to a Constitution which treated the Brazilians as mere colonists. A rupture between the two countries became inevitable. Measures taken by the Government at Lisbon, to compel the abasement of Brazil, and the recall of the Prince, hastened a crisis. The decrees reached Rio on the 10th of December, and, listening to the entreaties of his subjects, the Prince decided to disobey the obnoxious laws and remain. Independence was finally proclaimed September 7th, 1822, and the prince was proclaimed Emperor Pedro I. The first assembly was opened in 1823, and the Parliament was inaugurated in 1826. The reign of the first Emperor was, however, unfortunate.

The southernmost part of the Empire was lost for ever, and now became the Uruguay Republic, acting as a convenient buffer state, between Brazil and Argentina. Revolts succeeded each other, and Pedro abdicated in favour of his son on April 7th, 1831. He then embarked for Portugal to take the Government of that country into his hands. After a number of insurrections, the Regency was placed in the hands of Father Diogo Feijo, who exercised a wise control until 1840. He was succeeded by Araujo Lima, and the young Emperor came into his own at the age of 14, on July 23rd, 1843. Disturbances had now become chronic, and pacification was a long way off. For five years, the reign of Pedro II. was marked by revolt and insurrection. In 1851 the slave trade was abolished, and was entirely achieved by Constitutional means. The fact of the Royal Family emphatically refusing any compensation to the practically ruined planters, turned against them a great majority of the agricultural class of Brazil, who were almost entirely dependent on this enforced labour.

Now begins an heroic page of Brazilian history. In 1851, war was declared against the Argentine Dictator, Rosas, in defence of the Republic of Uruguay, and, although not very sanguinary, lasted three years. The second was an affair of quite a different kind. It cost Brazil £63,000,000, and many thousands of lives. She was engaged in a petty struggle (1864) with Uruguay, when Lopez, the Paraguayan Dictator, invaded Brazil and Argentina. This led to an alliance between the two countries attacked and Uruguay, and in 1865 operations were commenced. At first the allies were under the command of the Argentine President, General Bartolome Mitre. In the battle of the Riachuelo the Brazilian Navy, under Admiral Barroso, destroyed the Paraguayan

ships engaged, but the operations on land were not so decisive. A victory was won at Uruguayana (1866), but Lopez preserved intact the whole of Paraguay. The allied forces were now placed under the Marshal Duque de Caxias, and Paraguay was invaded. General Osario was already there, and the Brazilian battleships forced the passages of Curupaito, 1867, and Humaytá, 1868. The latter was a feat worthy to rank with the most famed in history, as the Paraná was lined with heavy batteries, and the gallant Brazilian commander forced a passage, after several failures, by disobeying the commands of his chief. The army was now able to push its way into the interior of the country, repulsing the Paraguayans at Itoróró, Avahy, and Valentinas (1868), and forcing Lopez to take refuge in the inaccessible parts of the country, to recruit fresh forces. The last campaign, 1869-70, was conducted by Conde d' Eu, son-in-law of the Emperor, who defeated the enemy at Campo Grande, and so ended the war. Lopez, in attempting to escape, was surprised by General Camara, and killed. This war secured for Brazil the free navigation of the Paraguay, placing Matto Grosso in fluvial communication with the capital. It was almost the financial ruin of the country, however, and the results were so disastrous to Paraguay that she has never recovered. Almost depopulated, there were very few men of mature age left in the country. The movement for the complete abolition of slavery had been growing for a long time, but the war with Paraguay had occupied the entire attention of the country for years, and in consequence the advocates for manumission had no opportunity of appealing to the country on this momentous question. Visconde Silva Paranhas do Rio Branco, the great statesman (father of the present Foreign Minister),

succeeded in obtaining Parliamentary sanction to a bill providing that every child born of a slave should be free. The Emperor at this time was in Europe, and the Regent, Princess Isabel, signed the law. The franchise was voted on the 9th of January, 1881, proposals were soon made for completing the good work already commenced, but were not successful until May, 1888, when a clear sweep of the whole system of slavery was made, by a law promulgated by both chambers, signed by the Princess, Regent for the second time, owing to the ill health of the Emperor, and received by great demonstrations of approval on the part of the populace. There is no doubt whatever that the act was premature. Sage reflections showed that the supply of free labour was entirely inadequate, and that the Negro was, through centuries of dependence on his masters, quite unfitted to suddenly find his relations with his master entirely changed. In place of security of tenure, and in many cases great license, which he had under the old régime, he found himself looked upon as a creature with no right to a living, and was all too frequently an outcast. The time was not ripe for such a coup d'état, much less to place the franchise in the hands of such a class as the ex-slaves were. Chaos resulted, hundreds of plantations were abandoned or only half cultivated, and in the State of Rio de Janeiro to-day, within fifty miles of the capital, one may see the melancholy result of what was intended to be an act of humanity.

The coffee producing states, and especially São Paulo and Rio de Janeiro, were the fertile soil in which was sown the seeds of revolution, and certainly the Republic, impossible to delay much longer, was precipitated by that law which gave freedom to the many, and penury to the few. The death knell of the Empire was tolled. The

Emperor had alienated the sympathies of the leading statesmen during the last few years, and his voyage to Europe was doubtless a most injudicious act. Isabel was disliked, both with regard to her ultra religious principles, and owing to her partisanship of the slaves. At this time the doctrines of Compte had found many disciples in Brazil, and Masonry had become a force to reckon with. Many circumstances were responsible for the debacle, but the most important have been stated. The leading spirits amongst the planters formed a Republican Party. It had, however, been organized on a small scale in 1870, by Saldanha Marinho, in São Paulo. The Church itself became an enemy to the Crown, throwing its weight (as always) into the side of the balance that appeared heavier. The demagogues hated the Emperor for his assumption of so much power. Benjamin Constant became the apostle of a movement that in one day gained a bloodless and stupendous victory. Changing, with the declaration of Mashal Deodoro da Fonseca, an Empire to a Republic, surely never had the militant arm achieved its aims by such means. Dom Pedro found himself without a single powerful friend when the crisis came. He bent his venerable head to the blow, and one of the most intellectual and patriotic rulers the world has ever known, passed out of history. A proposal was made recently to erect a statue to his memory in Rio, and the subject was mooted in Parliament, with the view of obtaining state assistance. Surely Republicians are more generous than Royalists. I wonder what the House of Lords would say to spending money to commemorate the memory of Oliver Cromwell, a man who deserved far more of posterity than a pitiable and despicable return to hereditary kings.

At the time of the Empire, the cities of Brazil were in

a very parlous state indeed. The streets of the capital were narrow, unpaved and sparsely illuminated with fish oil. Sewers and waterworks were not in existence, and the necessities of the people in this direction were confided to private enterprise. Most of the houses were one storied, and those more elevated, generally possessed a store on the ground floor. The few mechanics were careless and improvident, and scarcely any of the smaller master men had their own materials to choose from. Take the case of carpentry work. Friends had to be found who would travel into the country to buy the timber. None would work whilst possessed of money. Ladies scarcely ever went out, and when obliged by the necessity of attending mass, were carried in a sort of sedan chair, surrounded by a group of attendent Negresses. In the house, they usually sat, without stockings or slippers, in a very bare sort of deshabille indeed, listening to all the small talk and scandal collected by their favourite body-woman. They occupied themselves by lace or sweet making. (The Brazilian ladies are great adepts even to-day at concocting all kinds of delicious preserves and similiar dainties.) At 18 they were quite women, and too frequently began to age before the age of 25. The men occupied themselves in gambling, frequenting cafés and discussing politics. A shop was a convenient place of assignation, and apparently the last business transacted there was to sell the commodities exposed. Luccock and Burton relate many amusing stories of the apathy and indifference of the tradesmen, as well as of their profound ignorance of the arts of which they called themselves masters. There was no social life, because there was no society, properly speaking, apart from the aristocratic and bureaucratic element. The home life of the planter was of the simplest and most unpretentious description, and there

were no hotels or inns deserving of the name. Somewhat previous to the declaration of independence, it was a pleasant custom of the Prince to ride round with his entourage and point out a house he fancied. The door was accordingly marked "P.R." (Principe Real), and the owner compelled to dispose of it at an arbitrary figure, or too frequently make a gift of it to his august master. Small wonder, with the exactions of the Royal Family and the nobility, the people sought to avoid display, or anything which brought them under the notice of their rulers. These customs die hard. I know a tradesman, rich, even from an English point of view, yet he sleeps in a dirty little hovel, dresses in the most ordinary of clothes, and eats at the poorest kind of chop-house. His manners are as uncouth as his habits, and he represents a type still common amongst the Lusobrazileros of the present age. You may meet with them in the steerage of homeward bound steamers, and little dream that they could in all probability make you feel small, from a financial point of view. In spite of the encouragement given under the Empire to education, yet at least fifty per cent. of the population were quite illiterate. Lindley said that when he was there, the ignorance evinced on most ordinary subjects was startling. During the height of a sanguinary campaign, many never knew that the country was at war, and if they were aware, didn't care a rap. One or another casual reader of an European book, might speak of the possibility of future liberty. The proletariat had no interest in social and concrete questions, and were more inquisitive in parochial affairs than in national ones. Out of this people has sprung, in spite of their natural indolence of character, a race imbued with life and vigour. It seems as if the nation slept and required gigantic efforts to be awakened. If it

has done nothing else, the Republic has breathed the breath of life into Brazil. The whole country is astir, and if the early travellers, who found so much to decry, were enabled to step from their graves and revisit it, their amazement would be great, and they would admit that they themselves were quite out of date.

CHAPTER VIII.

The Republic, 1889—1909.

The 15th of November, 1889, saw the advent of the Republic.

The military dictatorship of Marshal Da Fonseca was brief, but remarkable for the formulation of the new constitution, which took place in February, 1891; the same year Parliament was dissolved, and he was obliged to resign, and place the reins of Government in the hands of another soldier, but an abler man, Marshal Floriano Peixóto. The crisis caused by the sudden emancipation of the slaves now came to a head, and the country was plunged, in addition, in a state of disorder and civil war.

In 1892 a revolution broke out which lasted nearly three years in Rio Grande do Sul. The Federal Government was called in by the state to restore order, but soon afterwards the revolters were joined by nearly the whole of the fleet (September, 1893). A monarchial character was given to the affair, in spite of the efforts of one of the admirals. This was one of the most severe crises through which Brazil passed, and, contrary to the general rule, the army was the saviour of the country. Marshal Peixóto played a great part in the struggle, and on one occassion the bombardment of Rio de Janeiro was commenced, and only stopped through the intervention of the foreign war vessels at that time in port.

In 1894 Peixóto was succeeded by the first civil President, Dr. Prudente de Moraes, who concluded the civil war, and started the work of reconstruction, so well followed by his successors. An attempt was made on his life by a fanatic, but the political disturbances were becoming fewer, and the state of the country improving, in spite of the terrible financial depression. During this period the first efforts of the Methodists to make active propaganda met with but little success, owing to the attitude of the priests, especially in Bahia, where bibles were publicly burned in the squares, without the slightest attempt on the part of the authorities to keep order. This can hardly be wondered at, considering the origin and want of discretion, tact, and tolerance on the part of the Protestant colporteurs.

The majority of these men were drawn from a class ill-fitted to do pioneer work in such a country. I remember a case where one occupied rooms in the same house as a Catholic father. He used to enter the apartment of the latter and place testaments on his bed, and lost no opportunity of insulting the faith and character of his religious enemies. Another fellow, ex-bible agent, blossomed out into a reverend after a couple of years in the country. Another took paying guests (in his house, in quite a modest street in Rio), contrary to the expressed rule of the society. During the administration of Dr. Moraes the limits between Argentina and Brazil were fixed in favour of the latter, after a dispute of more than a hundred years standing. This was owing to the good offices of the United States as arbitrator.

Compos Salles became President in 1898, and the rehabilitation of Brazil proceeded rapidly. The boundary between French Guiana and Pará was fixed (Treaty of Berne).

Dr. Salles was a Paulista, and had the mortification of seeing the country, and his own state, in particular, in very bad financial straits. His chief task was to re-establish the national credit, and to do this it was necessary to take serious measures. Specie payments were suspended for some time, and paper money, in large quantities, withdrawn and burnt. Another President from S. Paulo (Rodrigues Alves) came on the scene in 1902, and found things on a much better footing all round. During his term of office railway construction was pushed on rapidly, and the City of Rio de Janeiro in great part pulled down and rebuilt on magnificent lines. 1904 saw a great triumph at the St. Louis Exhibition, and the wonderful white palace in which were housed myriads of splendid examples of Brazilian products, was transferred to Rio de Janeiro, and rebuilt in a *few weeks* on a site in front of the bay, surrounded by gardens and fine promenades. In honour of the Monroe doctrine, it was called by the name of the American President, who was responsible for that much-discussed definite exposition of United States political views.

The Munroe Palace is constructed of marble and granite, and is a distinctive landmark. Its first noteworthy use was a meeting place for the third Pan-American Congress, attended by 80 representatives of 20 nations.

The Brazilian Government installed in the building a complete telegraph, telephone, and postal service entirely free to the delegates. It also maintained translators, typists, and clerks, and nothing in connection with the comfort or convenience of the delegates was left undone. The conference was opened by Baron Rio Branco (Foreign Minister), and a few words from his address are perhaps permissable—

"As young nations still, we should not forget what we owe to those who have furnished the capital with which we have entered into the world of competition. The very immensity of our territories, in a great part unpopulated and unexplored, and the certainty that we have ample resources for a population twenty times larger, would suggest to us the advisability of strengthening our friendly relations, and trying to develop the commercial interests which we have in common. From Europe we came; Europe has been our teacher, from her we receive continual support and example, the light of science and art, the commodities of her industry, and the most profitable lessons of progress. What in exchange we can give for this, by our growth and prosperity, will certainly constitute a more important field for the employment of her commercial and industrial activity——"

A potent factor in the success of the administration of Dr. Rodrigues Alves was his ability in the selection of a Cabinet. Of Baron Rio Branco we have already spoken, and shall again, and need only remark now that he is a fit son of the noble Visconde. He has succeeded in settling the claims of Bolivia, and has added to Brazil a territory (The Acre) as large as the whole of France. Dr. Laura Muller, Minister of Public Works, Industry, and Agriculture, was of German origin, and was popularly called Allemãozinho (the little German). He was responsible for a whole host of improvements.

Rio itself was transformed. Stately mansions sprung up in all directions. Dr. Passos (Prefect) worked like a Trojan, and a loan of £8,000,000 raised in Europe was added to a local one of half that sum in municipal bonds. Docks were started, which will be the largest in South America. They will be leased to a company under con-

ditions now being prepared. The railway terminus now somewhat outside the centre of the city, will be brought up to the quays.

The Central Avenue is considerably over a mile long, and is about 108 feet wide. Its continuation, and flanking by marine drives, is between four and five miles long, and 140 feet wide, and has long since been completed. The resewering of the whole of the city (which occupies an area as large as any in the world), and the provision of a new and plentiful supply of water, of excellent quality. The Central Avenue cost about £2,750,000, and the municipal theatre about £1,000,000.

600 Houses were pulled down in three months, and 3,000 workmen were employed.

The avenue is a magnificent street, and is lined with splendid buildings, some nearly 200 feet high, prominent amongst these may be noted the palatial offices of the *Jornal do Commercio* (doyen of South American papers, and established nearly 90 years), and *O Paiz*, a sort of *Daily Mail* of Brazil, as well as the National Steamship Line (the Brazilian Lloyd), Royal Mail Company, etc.

Many other fine streets were built, and a feverish activity was displayed during the whole of the last presidential term. One of the greatest victories was the improvement of the sanitation of Rio. Dr. Oswaldo Cruz, the Health Officer, banished entirely the spectre of yellow fever, and, indeed, was the original, but unwilling, cause of the attempt to create a revolution, in consequence of the compulsory vaccination law formulated by him. The popular demonstrations, headed by a section of the press, were so great that it was found impossible to carry its provisions into force, and it has been, although passed by the Chambers and signed by the President, practically dropped.

A concession was also granted to an Anglo-American Company to unify the whole of the tram service, and to supply light and power to the Metropolis. In a very few years Rio will be equipped with a rapid transit service of the very first class.

In 1906, President Alfonso Penna took his seat under most auspicious conditions. He had the assistance of the most notable member of the last Cabinet, and he came into office, pledged to continue the good work of his predecessor. Unlike the two former Presidents, he is a Mineiro (native of Minas Geraes).

Dr. Alfonso Penna has a long and honourable record as a public man. He has been Minister of War, Agriculture, and Industry at different times, and President of the Bank of Brazil, and President of his native state. Previous to his taking office he made a tour through all the seaboard cities of Brazil, in order to acquaint himself with the actual condition of the country. The outstanding figure in the *new* group of statesmen, by whom the President is surrounded, is a young but remarkably energetic man, Dr. Miguel Calmon du Pin e Almeida, Minister of Public Works, etc. Hardly 30 years of age he has the burden of an atlas on his shoulders. Railway extensions, and a new great trunk line; harbour works at Bahia, Santos, Pará, Victoria, Pernambuco, Rio Grande, etc.; the completion of the improvements in Rio de Janeiro itself, and, perhaps, most important of all, a great scheme of colonisation in co-operation with most of the states. This includes propaganda work in all the capitals of Europe, with a central bureau in Paris. The State of São Paulo has, it may be noted, *en passant*, its own separate office in Antwerp, and agencies in addition. It would be no exaggeration to say that Dr. Calmon has the work of three men at least, and that he has already

done wonders in the short time available.

Peace must always be given the preference to war, so we go on to speak of the Department of Finance, whose chief is Dr. David Campista, who is engaged in the arduous task of dealing with the ever-pressing problem of money, and in so doing naturally interested in curtailing the heavy expenses voted to his colleagues.

The Services go, as a natural sequence, hand-in-hand, and we cannot discriminate between Admiral Alexandrinho de Alencar, Minister of Marine, and Marshal Hermes da Fonseca, both a great contrast physically to the towering figure of the head of the Department of Industry. Little men though they may be in stature, there is no doubt they are great leaders of men, and which looms larger in the public eye, it is difficult to tell.

One is responsible for the renaissance of Brazil as a naval power, bringing her to the ninth place at a bound, with a really fine fleet. Three leviathians in construction are of 23,000 tons, and will be the largest, finest, and most heavily-armed battleships in the world. Their names will be appropriately "Minas Geraes," "São Paulo," and "Rio Janeiro." There are also some very fast scouts and destroyers, etc.

The Minister of War has succeeded, in the face of great opposition, in getting passed a bill providing for compulsory military service, from the age of 21 to 40. He has also re-organized the service, and weeded out a great number of undesirables. Both of these members of the Cabinet are severe disciplinarians, and necessarily so in a country like Brazil. The personnel of the navy is largely obtained from the north, the descendants of the Indian fishermen, who are accustomed to brave the terrors of the ocean in all weathers, being the best possible type for the purpose. They are mostly recruited near Per-

nambuco. The navy will also soon possess an up-to-date arsenal in the port, somewhat to the south of Rio, and much more suited to the purpose than the present one in the world-famous capital itself.

The Hague Conference, in 1907, showed to the world how Brazil knew how to look after her interests. Another triumph for the Baron Rio Branco was the selection of Dr. Ruy Barbosa as chief delegate.

This distinguished statesman has been by turns, deputy, juris consult, and journalist, and, owing to his attitude in the opposition during the naval revolt, he had to find a temporary home in England, and learned to appreciate the character of the Britisher; too much so, in fact, for many of his compatriots.

Dr. Barbosa was christened, at first, by the other delegates, Verbosa (Chatterbox), but he always had something worth noting to say when he made a speech. His was the triumph of the conference, for he brought his country into the limelight, where she is likely to remain. The honours of the Hague went undoubtedly to Brazil and Germany, representing the two extremes of *welt politic*. The United States, of course, had a good deal to say, and their delegates upheld bravely the country's traditions.

In January, 1908, the American Pacific Fleet dropped anchor in the Bay of Rio, and, although composed of the largest number of battleships and destroyers that had exer been assembled in the harbour, they were mere specks on the vast expanse of waters. Some 10,000 to 12,000 men had shore leave during the stay of the squadron, and hardly a discordant note was struck. The only disadvantage connected with their visit being (as a United States Diplomat said to me) that if they had remained longer they would have become demoralised by

kindness. On the 20th of the month, the Munroe Palace served again as an international rendezvous, a banquet being given that night to the Admirals, Commanders, and other superior officers of the American Fleet, as well as to the Foreign Diplomats, and the most distinguished Brazilians and strangers visiting the capital.

Some 600 sat down in that splendid building, and the scene will linger long in the memory of those who witnessed it. Baron Rio Branco made two remarkable speeches in English, and the American Ambassador and two American Admirals, as well as a Brazilian (the hero of Humaytá), uttered significant and trenchant discourses.

The latest success of the present administration was the great Exhibition, opened 15th of August, and closed 15th November, 1908. The whole of the surveys and the constructive work was completed in eight months. There were pavilions of posts and telegraphs, the central railway, machines, communications, woods and forests, liberal arts, fire, department of the press, of industry, besides those of the Federal Government, Portugal, Bahia, São Paulo, Minas Geraes, Santa Catherina, and many others, and halls devoted to concerts and amusements. The area could not have been short of 500 acres, and the site such as no other great exhibition ever boasted. Access was possible from the bay by water, and by electric car from the centre of the city. A fitting commemoration of the centenary of the opening of Brazilian ports to international commerce, and we shall observe in a later chapter how much Brazil has progressed in the last 100 years. The Republic has amply justified its existence, and its motto, "Ordem e Progresso," needs no garter King-at-Arms to decide as to its legitimacy, or to that of the banner on which it is

placed. The blue globe, showing the Southern Cross (though this is wrongly arranged), and the yellow lozenge on a green field, typify bravely the golden riches of the south, and her verdant plains and hills, awaiting the millions who will, one day, fill her desert places with a hundred white cities: fit satellites of the great Metropolis (Rio de Janeiro).

CHAPTER IX.

Area, Distribution of Population, and Immigration.

The first census was taken in 1872, and the last in 1900, and the estimated population is given up to 1908. It must be understood, however, that with a large number of savage and semi-savage tribes of Indians, inhabiting such states as Amazonas, Goyaz, and Matto Grosso, not to speak of parts of São Paulo and Paraná, it has been found impossible to give accurate figures.

Alogôas has an area of 35,000 square miles. The population in 1872 was 348,000, now 720,000; Maceio has 36,000, Penedo 18,000, Pilar 16,000, Palmeira 20,000 and Santa Luzia 15,000 inhabitants.

Amazonas—area 1,138,212 square miles. Population (1872) 57,000, (1908) 280,000. The capital (Manáos) 70,000.

Bahia—area 255,855 square miles. Population (1872) 1,379,613, (1908) 1,900,000. Cachoeira has 50,000, Santo Amaro 85,000, Nazareth and Maragogipe about 20,000 each, Valença 25,000. Joazeiro, Bomfim, Alagoinhas, Santa Anna, Ilhéos, Cannavieiras and Calaverras are other important towns.

Ceará—area 62,550 square miles. Population (1872) 721,686, (1908) 850,000. The capital (Fortaleza) 50,000 souls.

Espirito Santo—area 26,901 square miles. Population (1872) 82,137, (1908) 240,000. Victoria 15,000, Itapemerim 20,000.

Goyaz—area 448,431 square miles. Population (1872) 160,395, (1908) 280,000. Goyas city 14,000.

Maranhão—area 275,931. Population (1872) 360,740, (1908) 540,000. St. Luiz de Maranhão 32,000.

Matto Grosso—area 897,871 square miles. Population (1872) 60,417, (1908) 160,000. Cuyaba 40,000, Corumbá, Matto Grosso, Caceres, etc.

Minas Geraes—area 344,913. Population (1872) 2,102,689, (1908) 4,500,000, Bello Horizonte (capital) 25,000, Ouro Preto 20,000, Juiz de Fôra 30,000. Other cities—St. João d'El-Rey, Barbacena, Queluz, etc., some thousands each.

Pará—area 686,829 square miles. Population (1872) 275,237, (1908) 500,000. Belem do Pará about 120,000.

Parahyba do Norte—area 44,838 square miles. Population (1872) 376,226, (1908) 550,000. Parahyba (capital) 30,000.

Paraná—area 132,792 sq. miles. Population 126,722, (now) 400,000. Curityba 55,000. Paranaguá, Antonina, Morretes, Ponta Grossa, Castro, Guarapuava and Palmeiras are all small towns.

Pernambuco—area 77,037 square miles. Population (1872) 841,539, (1908) 1,400,000, Pernambuco city (Recife) 120,000. There are many cities beside the capital, but all quite small.

Piauhy—area 181,078 square miles. Population (1872) 211,822, (1908) 400,000, Therezinha about 50,000.

Rio Grande do Norte—area 34,491 square miles. Population (1872) 233,976, (1908) 350,000. Natal 18,000, Mossoro 12,000.

Rio Grande do Sul—area 148,933 square miles. Population (1872) 446,962, (1908) 1,400,000. Porto Alegre 90,000, Pelotas 30,000, Rio Grande 25,000, Uruguayana 15,000. Bagé, Livramento, etc., are all small places.

Santa Catherina—area 44,493 square miles. Population (1872) 159,802, (1908) 350,000, Florianopolis 35,000, Blumenau and Joinville are colonial centres of small urban population.

São Paulo—area 174,585 square miles. Population (1872) 837,354, (1908) 2,600,000. São Paulo city (1872) 26,557, (1908) 300,000, Santos 50,000, Amparo 35,000, Piracicaba 40,000, Guaratinguetá 40,000, Taubaté 35,000.

Sergipe—area 23,450 square miles. Population (1872) 234,643, (1908) 380,000. Aracaju (capital) 25,000, Estancia 15,000, Larangeiras 12,000.

The State of Rio has an area of 491,736 square miles, and about 1,350,000 population.

The Federal District of Rio has an area of 669 square miles. The population in 1872 was 274,972, in 1890, 522,651; in 1900 746,749; in 1908 the probable population was 850,000, this is, of course, judging by that given by the census of 1900, although it was considered to be very deficient.

The city itself has about half a million souls, and Nictheroy (Praia Grande) the State Capital some 40,000, Petropolis 25,000, Campos 35,000, Macahé 7,500, Parahyba do Sul 28,000, Rezende 16,000, Vassouras 10,000, Novo Friburgo is also an important place, as also are Cantagallo, Valença and Barra do Pirahy.

The Acre Territory has 114,600 square miles. There is, however, no record as yet of its population.

We thus find Brazil has an area of 5,682,415 square

miles, and an approximate population of 20,000,000, of whom 45 per cent. are males. The most remarkable thing in these figures is, undoubtedly, the absolute want of comparison between the sizes of the states and their population. A curious effect of the gold and diamond fever may be also noticed in the disparity between the number of inhabitants in the States of Rio de Janeiro (including the capital of the Republic) and Minas Geraes, in spite of the fact that the latter has no city which may, by any stretch of imagination, be called a large one. Of course the ravages caused in the greater part of the former state, up to 1900, by the yellow fever, has a great deal to do with the discrepancy, not so much through the actual mortality, but owing largely to the exodus of the inhabitants. Many parts of the State of Rio have a lesser population now than fifty years ago. With regard to the Constitutional law, which fixes the Capital of the Republic at a selected site in Goyaz, a syndicate offers to build all the necessary Government offices and the President's Palace, to complete the railways necessary, establish power and light, sewage, trams and water supply, in short, to create a model city, free, if the surplus lands and concessions for public services be granted to it for a term of 90 years, and that it shall be free of taxes for 20 years.

Colonisation.

The first attempt at colonisation, other than by Portuguese, was by John VI., in 1818-19. He started two German villages in Bahia, and one Swiss one at Novo Friburgo (State of Rio). In 1851 the Emperor, Dom Pedro, invited over a number of Germans, and the colony of Blumenau, and that of Joinville, were soon founded, to be shortly followed by that at Petropolis. In

1859 the Prussian Government passed a law prohibiting emigration of its subjects to Brazil, followed long after by the French, and later by the Italian restrictive measures. It cannot be wondered that emigration has fallen off since 1891, the year which reached the high-water mark.

In 1867 a large number of Americans from the South ern States reached Brazil, and were settled in Paraná, São Paulo, Minas, Rio, Espirito Santo, etc., and about the same time the British immigration was not inconsiderable.

The grand total of 1891 was 277,808, of whom more than 116,000 were Italians. This influx was doubtless due in part to the crisis in the Argentine Republic (1890-92), as at no period since have the arrivals totalled half that number in one year. Since 1895 the figures have demonstrated the necessity of measures for encouraging the flow of colonists into the country, and the first of the states to show the way was São Paulo. In 1896, 1899 and 1907, the State of Minas Geraes created laws dealing with this problem, and Paraná, Bahia, Matto Grosso, etc., followed suit. On the 19th of April, 1907, the Federal Government issued a national decree regarding immigration and colonisation, the text of the principal articles of which is herewith appended. The *raison d'etre* of this decree lies in the position of irresponsibility of the several states before the Federal Government, and, in consequence, as regards propaganda in Europe. This had been the cause of the obnoxious laws passed by most of the European Governments, as regards Brazil, and the most important result, of an immediate nature, achieved by the new Government department is the practical revoking of these measures.

The project, establishing a commission in Europe, was vigorously attacked by a certain section of the Brazilian press, but, as a matter of fact, the propaganda has amply

justified itself. The fact that from many parts of the United States repeated requests for concessions are coming in, shows that the conditions of life in Brazil are not such as certain Europeans imagine. A society, numbering 1,600, desires to come all the way from San Francisco, California, to São Paulo, and the great interest takhn in Brazil generally in the United States shows that the shrewd farmers of that vast Republic know a good thing when they see it. The Japanese societies of emigration have also succeeded in inducing some 5,000 Nipponese to leave their native land. 787 arrived at Santos on June 18th, last year (1908), and to crown all, came in a Japanese steamer, the "Kasato Maru," which made the passage from Yokohama in less than six weeks. It is, however, doubtful whether the introduction of these Coolies will prove an unmixed blessing, and the yellow press is now engaged in warning the nation of the "Asiatic Peril," as the German question is by this time, and deservedly so, a thing of the past. Referring to the Teutonic colonies in Santa Catherina and Rio Grande do Sul, it is a curious fact that coloured servants are often obliged to learn German, instead of the alien learning the language of the country. Some towns are entirely Teuton: mayor, councillors, police, national guards, etc., but they are none the less good Brazilian citizens, and would prove good soldiers in defence of their adopted Faderland. The fact of their adhering to their own language, and to their old forms of Sangerbunds and Vereins, is an instance of their strength rather than their weakness. The Englishmen who have lost their mother tongue (as many have in Brazil) are less virile than those who retain their idiom as well as their national attributes.

Figures just to hand give the immigration in 1908 as 94,695, a very large increase on 1907.

To those who have been misled by malicious and interested persons, I would say, get hold of the books in English, mentioned at the end of this work, and digest them carefully. Hear what Professor Wallace says, laugh at Captain Burton's quaint criticisms (he was British Consul at Santos) and study Fletcher and Kidder, Scully, Bates, etc. The overwhelming testimony of the greatest and best scientists, business men, and ordinary travellers, during the last 50 years, is that Brazil is a country *eminently* fitted for the European. Read, mark, learn, and inwardly digest, and then treat with the contemptous scorn it merits, the attempt to discredit a country that, but for the short-sightedness of the British in the days of the conquistadors, would have been now the brightest ornament in the constellation of colonies. Again, he who is afraid of the security of his earnings need have no care. His wages are the very first call on an estate. If he hires himself out through the medium of the Government, the latter will see that the contract is entirely in order, and enforce its provisions. I speak, however, more to the man who will plough his own furrow, he who wishes a stake in the country, and I say with St. Hilaire, if ever there is a place that could do without the rest of the world, it is Minas Geraes, and I go further, and add to Minas at least one half of the *whole* of Brazil, from the Amazon to the Paraná. There is room for all, and the only condition necessary is ability to work, and the leading of moral lives. There are no religious disabilities of any kind, and one may find members of almost any faith, scattered over the Republic, including Mohammedans, Jews, Evangelicals, Positivists, as well as the majority, Roman Catholics. There are, as we have stated in another place, Methodist churches in plenty, especially in the State of Minas Geraes.

In 1907, 30,723 immigrants entered the port of Rio de Janeiro. Of these 119 were English and 36 American.

During the first half of 1908, 40,791 persons arrived as colonists in Brazilian ports, and of these 6,467 were state aided. The number at Rio de Janeiro alone reached 19,788, comparing with 13,552 in the same period of 1907. There was 149 British and 49 Americans more than in the whole of 1907. Figures, just to hand, give the number of immigrants in 1908 as 95,000, in round figures.

The Federal Government has founded the following new colonies:

State of Espirito Santo, Affonso Penna, State of Minas, João Pinheiro, State of Janeiro, *Itatiaja* (considered by all travellers as a national sanitorium), Visconde de Mauá, State of Paraná, Xavier da Silva, State of Santa Catherina, Alto, Braço, Norte.

Minas, with Federal aid, has established two colonies. São Paulo started six new colonies, and Rio Grande do Sul, assisted, enlarged the colony Guarauy.

Surveys have been made by the engineers of the new department of colonisation, in all of the states which have responded to the appeal of the Federal Government, and this year will, without a doubt, show remarkable activity, and a great increase in the number of immigrants. Bahia has also established a department of colonisation, and issued literature in various European languages. The only state to offer free rural lots at present is Matto Grosso, but the cost of land in all the others is quite low, and payments are spread over a number years. The special inducements offered also quite justify a normal price for the lots, as they are surveyed and selected by the Government, and the colonists are transported thither at the expense of the department.

Extracts from FEDERAL DECREE, No. 6,455, April 19th, 1907.

REGULATIONS REGARDING IMMIGRATION AND COLONISATION IN BRAZIL.

Art. I. The peopling of the soil will be promoted by the Union in agreement with the State Governments, railway and river navigation companies, other companies or associations, and with private individuals, provided that the sureties and rules hereby guaranteed and laid down are duly observed.

Art. II. There shall be counted as immigrants, all foreigners of less than 60 years of age, who are not suffering from contagious diseases, nor plying illicit trades, and who are not criminals, rogues, beggars, vagabonds, lunatics, or invalids, who arrive at Brazilian ports, travelling third class, at the cost of the Union, States or third parties, as well as those who (*Ceteris paribus*) have paid their own passages, and desire to enjoy the same privileges as other new arrivals. Persons over 60 years of age, or unfitted for work, will only be admitted when accompanied by their families, or when coming to join them, provided that there is in the family at least one or two against the member who is over 60 years of age.

Art. III. To immigrants who establish themselves in any part of the country, and devote themselves to any branch of agriculture, industry or trade, or to any useful craft or profession, the following guarantees will be granted: complete liberty of action and freedom to engage

in any trade, provided that the same does not endanger public safety, health or morals; complete liberty of religious belief; and finally, civic rights, as enjoyed under the Constitution and laws by Brazilians themselves.

Art. IV. The Union, without interfering with the liberty of similar action on the part of the states, will enter into an accord with them to direct and facilitate the placing the immigrants who desire to settle as owners of their own land, and will protect and advise such spontaneous immigrants as need material aid for their first instalment.

Art. V. The colonies shall be of sufficient extent to admit of devolopment, easy and convenient means of transport, on land chosen as fertile, where conditions are healthy, and there is abundance of drinking water.

Art. VII.

(5) The State will provide the immigrants with tools and seeds free of charge, on first being installed, whilst the Union (Federal Government) may grant them these, and other favours for the same.

Art. VIII. The State may give any assistance to the immigrants, independent of that given by the Union.

Art. XIII. Localities will be chosen which conform to the conditions in Art. V., as well as the following:

(1) Convenient altitude and soil fitted for all kinds of cultivation.

(2) A position on or near railways, or navigable rivers, or close to populous centres, where the holders of the lots will find a ready market.

(3) A constant and ample supply of water, both for domestic and drinking purposes, and for agricultural and industrial purposes.

(4) Topographical configuration, and other conditions permitting the use of agricultural machinery.

(5) Forests which will afford a sure and cheap supply of timber for building and other works.

(6) A large enough area to permit of the increase of the nucleus, so that relatives or descendants of the first immigrants may be invited to come and form new households, and hold lots in the same vicinity.

Art. XIV. When the locality has been chosen, the lots will be marked, and all necessary work put in hand, and the place prepared for occupation by the colonists.

Art. XVIII. If the position and importance of the nucleus demand the establishment of headquarters, a site will be reserved, and the necessary buildings erected.

Art. XIX. In each nucleus, ground will be set apart for the erection of schools, and for experiments in agriculture, for instruction farms, and for industrial purposes.

Art. XX. The lots will be classified as rural and urban.

(1) Rural lots will be devoted to agriculture and cattle breeding, and will be of sufficient extent for the colonists who own them.

(2) As a general rule, rural lots will not exceed 25 hectares (about 62 acres), when situated along or near a railway, or river navigated by steamers, but otherwise they may be up to 50 hectares.

(3) Urban lots will be those situated at the headquarters, and will ultimately form the township, and all their fronts will be on streets and squares.

(4) No urban lot may exceed 3,000 square meters, unless set apart for some special purpose.

Art. XXI. As a general rule, a good and sanitary house will be built on each urban lot to be occupied by the immigrant and his family, whilst the ground will be prepared for the first cultivation, to be made by the person who acquires it.

(1) Immigrants who desire to erect houses at their own expense and according to their own taste, will have lots without houses reserved for them.

(2) Under the conditions of the preceding, the immigrant and his family, who acquire the lot, will be afforded temporary quarters, until they have built the house, which must be within the space of one year.

Art. XXII. Rural lots will be sold either for cash or for payments in instalments, in the former case, a definite title will be handed over immediately, and in the latter, a provisional title, which will be substituted by a definite one as soon as all payments have been made.

(1) Anyone purchasing a lot on the instalment system, may pay off the debt in full, or in part, before the due date, at any time, in order to shorten the period for receiving the definite title.

(2) Under the conditions of the preceding paragraph, the purchaser will enjoy the privileges of paragraph 2, Art. XL.

Art. XXIII. Urban lots will only be sold for cash.

Art. XXIV. Lots will be sold at a moderate price, which shall be previously fixed, according to their size and position.

Art. XXV. Where there is a house on the lot, the cost price of the same will be added to the debit.

Art. XXVII. *Immigrants not accompanied by their families may only purchase rural lots for cash.*

Art. XXVIII. Immigrants accompanied by their families may acquire a new lot after obtaining a definite title to the first. When the family consists of more than five workers, or when the immigrant has improved the first lot, he will be allowed the preference for the purchase of a second, near the first.

Art. XXIX. The foreign immigrant (agriculturalist) who has been less than two years in Brazil, who marries a Brazilian woman, or the daughter of a Brazilian born in the country, or the Brazilian who marries an alien woman, who has been in the country less than two years as an immigrant, will be given a lot with a provisional title, without the couple having to pay anything, provided that they have lived in harmony for a year, and have improved the said lot.

Art. XXX. If such immigrant desires to obtain a lot with a definite title immediately after his marriage, the same will be sold to him for half the stipulated price.

Art. XXXI. On the provisional title shall be written the full price of the lot, and the conditions to be observed for the obtaining of a definite title.

Art. XXXIV. Immigrants will be transported to the colonial nucleus free of charge.

Art. XXXV. Immigrants will be given, free of charge at first, seeds, hoes, spades, picks, axes, and scythes.

Art. XXXVI. During the first six months, from the date of their arrival at the nucleus, and until the harvest and sale of their produce, immigrants coming from abroad, and settled as owners of lots shall, when necessary be granted means for the maintenance of their families.

Art. XXXVII. For the space of one year, under the conditions of the preceding article, all immigrants will receive medical attendance and medicines free of charge. This period may be prolonged at the discretion of the administrator of the nucleus.

Art. XXXVIII. Stores, where provisions and other articles of prime necessity will be sold at moderate prices, will be established in the colonies, to guarantee supplies

to the inhabitants who, however, will be entirely free to purchase where they like.

Art. XXXIX. During the first year after his instalment, or for a longer period if the Government so decrees, aid may be given to such immigrants as desire it, for the purchase, or hiring, of agricultural implements and machinery, live stock and vehicles necessary for the cultivation of the lots, preparation and transport of the produce.

Art. XL. The price of the lots, with or without a house, when the same are purchased on the instalment system, as well as any aid granted, except for work done, or classed as gratuitous, shall be written in a book and handed to the debtor, in the form of a current account, and shall constitute the debt of the immigrant, for which the head of the family is responsible. He shall begin amortisation by yearly instalments, not later than at the end of the second year after his establishment. After this date, if no payment has been made, interest will be charged at the rate of three per cent. per annum, on the instalments due.

(1) When the colony is situated on or near railways, or rivers navigated by steamers, the period for amortisation shall be five years, counting from the first day of the third year of the instalment of the immigrant, in other cases, or when the Government deems it advisable, the period will be eight years, under the same conditions.

(2) The immigrant who pays his debt in advance will have a right to rebate at the rate of twelve per cent. per annum, on instalments that are outstanding.

(3) The immigrant who pays the full value of the lot, will immediately receive a definite title to the

same, even though he has still other debts outstanding, contracted with the administration of the nucleus.

Art. XLI. In the event of the decease of the head of the family, in whose name the provisional or definite title had been drawn up, the lot will pass to his heirs, or legal representatives, on the same conditions on which he himself held it.

If the nucleus has not yet been emancipated, the transfer will be made by an official order of the administration without any legal intervention.

Art. XLII. Any debt which the deceased head of the family had contracted with the nucleus, will be considered extinct, if he leaves a widow and orphans, save that arising from the purchase of the lot on the instalment system.

Art. XLIII. If the lot was purchased by instalments, and three had been already paid by the deceased, the remainder will be remitted in favour of the widow and (or) orphans, and a definite title granted.

Art. XLIV. Government will maintain primary schools free, and will organise agricultural shows if deemed expedient.

Art. XLV. Prizes will be offered to producers who most distinguish themselves at such exhibitions.

Art. XLVI. Where the nucleus is intended for aliens not more than 10 per cent. of the lots may be sold to Brazilians, but where the former exceed a certain number, a special area near the lots will be set aside for Brazilians if deemed advisable.

Colonies Due to the Enterprise of Railway Companies.

Art. LXIII. The choice of the localities will depend on careful study of all the circumstances essential to the development of the colony.

Art. LXIV. The choice must be examined and approved by the Federal Government.

Art. LXV. In addition to the foregoing, the plans, roads, divisions of lots, types of houses, etc., must be approved by the Government.

Art. LXX. The Government may authorise, or promote at its own expense, the introduction of immigrants from Europe to these colonies.

Art. LXXI. The service of settling the immigrants shall be at the expense of the company, which shall furnish the new comers with tools and seeds, and when possible, give them paid work on the railway or near the lots, and shall supply them, whenever necessary, with advances of food or money until harvest time.

Art. LXXIII. The price of lots, and houses, and conditions of payment depends on the approval of the Government, which reserves to itself the right to fiscalise anything in the colonists' interests.

Art. LXXIV. The company binds itself to grant a rebate of 50 per cent. on the ordinary tariffs on colonial produce for five years, dating from the instalment of the first family on a lot.

Art. LXXV. The company will render every aid in its power, and will stimulate the formation and increase of small industries. It will create free primary schools, and build churches for the immigrants, regardless of denomination.

Reception of Immigrants.

Art. XCVII.

(2) At ports properly equipped for the reception of immigrants, disembarcation, lodging, food, etc., until the destination in chosen, and transport there with all belongings; and

(3) Transport will be gratuitous.

Art. C. Immigrants' baggage, including tools, will be admitted duty free.

Art. CXVII. The service of reception and distribution of immigrants will be carried out at the expense of the Union at the port of Rio Janeiro.

Art. CXVIII. In state ports (as Bahia, Santos, etc.) the service will be at the expense of the state interested, aided by mutual arrangement by the Union.

Repatriation.

CXXVII. Government will repatriate such agricultural immigrants who may have been brought in at its expense, if they have resided less than two years in Brazil, and are incapacitated from earning their living, and have none of their family to support them.

Colonisation.

Regulations of the State of São Paulo, 27th December, 1906.

Every immigrant intending to settle in the state, and who gives notice to the official of the department before leaving the ship at Santos, will be conveyed, with his luggage and other belongings, free of charge, to S. Paulo, and those who take up land will be allowed the amount of their third class passage, from Europe, towards paying the price of same. Five to ten years are allowed to settle the same debt. The families of such immigrant are received into the Home at S. Paulo, and the head of the family is franked as far as the colony he intends to settle in, and back again to S. Paulo. On arrival at the lot selected the colonists are sustained there for 15 days, and receive tools, and seeds necessary for the first crops, without any charge.

Of the colonies under Government protection, it may be said that they are situated along the railway lines. The annual payments vary from £6 5s. to £18 15s. Recent arrivals, without resources, are given three days' work weekly if required, in order to maintain themselves and their families until the harvest is in.

Immigrants are considered to be persons under 60 years of age, either in families or single men, who, as agriculturists or workmen of any kind, enter the country with the intention of remaining, and come third class or steerage from Europe. In the case of those over 60, they must be accompanied by a family of two or more male

adults, in order that their support may be assured. The number of colonies established by the state is at present 22. One only being somewhat distant from a railway station or port. The price of land ranges from 5/- to 35/- per acre, according to its quality and situation. Free schools are established in each colony, and there are always physicians and ministers of religion at hand. Family lists (to be procured from any of the Government agents) should be filled in and returned before sailing.

CHAPTER X.

Naturalisation, Constitutional and Commercial Laws, and Education.

Synopsis of Naturalisation Law of May 14th, 1908.

Art. I. The following persons are considered to be Brazilian citizens:—

(1) Those who are born in Brazil, although the father be a foreigner, provided he is not employed in the service of the nation to which he belongs.

(2) The children of Brazilian fathers, and illegitimate children of Brazilian mothers, born in foreign countries, if domiciled in Brazil.

(3) The children of Brazilian fathers employed in the service of the Republic in foreign countries, although not domiciled in Brazil.

(4) Foreigners who resided in Brazil on the 15th of November, 1889, and who had not up to August 24th, 1891, declared their intention of retaining their original nationality.

(5) Foreigners owning real estate in Brazil, married to Brazilian women, or having Brazilian issue, provided they are resident in Brazil, and have not declared their intention to adhere to their original nationality.

(6) Foreigners who apply for naturalisation under the present law.

Art. II. Naturalised foreigners shall enjoy all civil and political rights, and may hold any public office, except that of President or Vice-President of the Republic. The office of Senator may be held after six years citizenship, and that of Deputy after four years.

Art. IV. Foreigners who desire Brazilian citizenship must apply to the President of the Republic, through the Ministry of Justice. Applications must be signed and authenticated by a notary public, and must state nationality, parentage, domicile, profession, condition, and legitimate issue must also be mentioned.

Applications must be accompanied by certificate of personal identity, legal age, residence of not less than two years in Brazil, good moral and civil conduct, and proof that applicants have not been indicted in Brazil or elsewhere for the offences enumerated in Art. IX.

Art. V. Necessity of actual residence shall not be obligatory in the cases of foreigners married to Brazilian women, those with real estate in Brazil, those interested in some industrial undertaking, or who are inventors or introducers of some industry useful to the country, and those recommended by their talents or literary attainments, or by their professional skill, and finally, sons of naturalised foreigners born abroad before their father's naturalisation.

Art. VI. Certificates from public departments, or given by judicial, municipal, or police authorities of Brazil are sufficient proof of identity. Certification of signatures by notaries, or in case of application through the latter, power of attorney is sufficient, and birth or baptism certificates, or passports, or other admitted documents, will be proof of legal majority, and certificates from the authorities of his place of domicile, from his consul or diplomatic representative will be accepted as

proof that he has not been convicted of the crimes mentioned in Art. IX.

Art. VIII. *Papers relating to naturalisation are exempt from all costs, stamps or fees.*

Art. IX. Foreigners who have been convicted of homicide, theft, bankruptcy, perjury, smuggling, forgery, counterfeiting, or immorality will not be permitted to naturalise.

Art. XVI. The titles of naturalisation must be claimed within six months by persons living in the Federal Capital.

Art. XVII. Persons residing in the states must claim their titles within one year.

Notes on the Constitution (24th February, 1891), and Form of Government of Brazil.

The Republic consists of the United States of Brazil, and the internal affairs of each state may not be interfered with by the Union, unless to repel foreign invasion, or in the case of civil war between two states, or to re-establish order within the territory of any state, by request of its authorities.

Each state must provide for its own necessities, unless in the case of public calamity. It is the exclusive prerogative of the Union to decree duties and taxes on imports and port dues, stamp duties, and postal and telegraph charges, to maintain banks, and create custom houses, and the laws of the Union shall be executed by its officials, but they may be entrusted to State Government by consent. Interstate duties are prohibited, but states may create export duties, taxes on real estate, and

charges of a state nature in relation to postal and telegraph services.

Interference with or aid of religion is prohibited. Coasting traffic must be carried on in national bottoms (i.e., under the Brazilian flag).

Legislative powers are vested in the National Congress, with the sanction of the President. The elections for Senators shall be carried on simultaneously throughout the country. Legislature shall last for three years. There shall not be less than four Deputies for each state. The Senate shall be composed of citizens over 35 years of age, and include three from each state, and three for the Federal District of Rio de Janeiro.

The President and Vice-President of the Republic shall be elected by direct suffrage of the nation, and the mandate of a Senator shall last for nine years. The Senate alone shall have the power to try and sentence the President of the Republic, and the other members of the Government. The President must be a Brazilian born, and be over 35 years of age. He may choose and dismiss at will all Cabinet Ministers, and declare peace and make war.

Adult suffrage is the law, with certain exceptions. The Cabinet consists of the Ministers of the Exterior (foreign affairs), Interior and Justice, Finance, Marine, War, and Industry, Railways, and Public Works, and since 1907, Agriculture, although at the time of writing this portfolio had not been offered to anyone.

The judicial power consists of a supreme court of 15 justices, who hold office during life, and ordinary Federal Courts, scattered through the country.

Brazil forms part of the Postal Union, and is a party to the international agreements with regard to telegraphs,

submarine cables, marine signals, and protection of industrial property.

Foreigners enjoy the same civil rights as Brazilians, including trade marks and patents privileges. The army consisted of 40 battalions of infantry, 6 of siege artillery, 6 regiments of field artillery, and 14 regiments of cavalry, but since 1902 has been reorganised and increased. Conscription has also been adopted. No aliens are admitted into the army or navy. The navy has been entirely reformed, and will be quite the most powerful of the South American marines. Ninth, and perhaps eigth, place in the world's navies will be reached by 1910.

With regard to marriages, the civil ceremony is obligatory, and the religious services are not officially recognised. Both are the rule, however, amongst Brazilians of all classes. The laws for the protection of single women are very severe, and in the case of rape every possible attempt is made to compel immediate marriage, thus avoiding heavy punishment. Registration of births is compulsory, but the law is frequently evaded, as is also the new vaccination decree, although schools are obliged to publish a notice refusing to take pupils who have not been subjected to the operation.

Education is free, but not obligatory in all the states. Elementary schools are of two grades. In the first pupils remain from 7 to 13, and in the second until 15 years of age. Besides the ordinary subjects, moral and civil instruction is given, and the elements of French, and elementary algebra and trigonometry, and commercial natural history. Elementary principles of law and political economy are also taught. Secondary schools may be entered with a certificate from the primary ones. The capital has two schools of this class. There are others in all of the states, and faculties of law at Pernam-

buco and São Paulo, as well as medical schools, the polytechnic at Rio, and the school of fine arts, and the mining school at Ouro Preto. Private colleges, with the necessary equipment and professors, are permitted to grant degrees of doctorate (Bacharel). The course in the schools of law lasts five years, and that of the mining school six years. The medical school at Rio is connected with the splendid Misericordia Hospital, with 1,200 beds. The polytechnics are training colleges for engineers and bachelors of physical or mathematical science.

There are fine public libraries all over Brazil. The National Library in Rio possesses more than 400,000 printed books and manuscripts. There is also a National Museum and Academy of Fine Arts, and a splendid world-famous Botanical Gardens. The Brazilian National Academy of Letters has 40 members.

In São Paulo there is a very fine modern museum, Ypiranga, on a site said to commemorate the declaration of independence. There is also there the McKenzie College, under Presbyterian control, with nearly 600 students. The pupils are mostly Brazilians, but there are representatives of nearly all the nationalities to be found in Brazil. The States of São Paulo and of Minas Geraes are probably the best equipped with elementary schools in the Union. The former has also a fine agricultural college.

Patents and Trade Marks.

Patents taken out in foreign countries, and in Brazil, expire at the same time as abroad. Inventors' rights may be confirmed by law, without taking out a fresh patent.

Trade marks can only be transferred with a business, and registration, deposit, and publication are essential

for protection. Duration of trade marks is 15 years, but they may be renewed repeatedly. Infringement of trade marks is punished by a fine of 500 to 5,000 milreis, or by imprisonment for six months.

Coinage.

Bronze, 20, 40, reis ... ... (100 reis equals 1½d).
Nickel, 100, 200, 400 reis ... (1 milreis ,, 1/3).
Silver, 500, 1,000, 2,000 reis ... (2,000 reis ,, 2/6).
Paper 1, 2 milreis and five hundred reis being withdrawn.
5, 10, 20, 50, 100, 200, 500 milreis (500 equals £31 5s.)
One conto is 1,000 milreis (1,000 milreis ,, £62 10s.)
(1,000$000).
£1 sterling, therefore, equals 16 milreis.

Many false notes are in circulation, and attention must be paid to the series which is in current use, as designs are withdrawn periodically to avoid forgery, and their values consequently depreciate on a sliding scale.

Weights and Measures.

The metric aystem is in general use, but some of the old Portuguese measures, etc., are still common. Amongst these are:

Weights.

Oitava, 2 drams; onça, 1,001 ounces; marco, 8,008 ozs. libra, 1·01 lbs.; arroba, 32·32 lbs. (15 kilos); quintal 129·27 lbs.
Tonelada, 1·745 lbs. 12 oz.

Long Measure.

Braça, 7·218 ft.; vara, 3·609 ft.; pé, 1·10 ft.; palmo, 8·64 ins.; pollegada, 1·08 ins.; milha, 1·37 miles; legoa, 4·11 miles.

Dry Measure.

Moio, (61·7 bushels); fanga, (4·1 bushels); algueire 1 quarta (1 peck); selamin (1 quart).

Liquid Measure.

Tonel, 887·6 qts.; pipa, 443·8 qts.; almude, 31·75 qts.; canada, 2·8 qts.; quartilhos 1·4 pints.

Law Relating to Commercial Travellers.

Commercial agents are not required to take out any special license, or to have passports or certificates, but owing to the new regulation providing for deportation of undesirable aliens, it is advisable for such travellers to register. Without this precaution they cannot bring a suit to enforce payment of a debt, and persons buying off an unregistered agent can refuse to pay for the goods, if they choose. Most firms who send out representatives, establish relations with some local house, and the collections are taken over by the latter. In this way it may be possible to avoid paying taxes in the larger cities. Some states require a license. The states and municipalities have the power to fix fees, which are apt to change. Samples are subject to duty, and the latter is not refunded, but such samples are not liable to a special duty of 10 per cent. (vide No. 560 of Customs' Regulation). All merchandise must be accompanied by a consular invoice, except in case of small samples, not exceeding £10 in value. To secure prompt and fair treatment in the Customs, it is advisable to treat with a friendly merchant of good local standing. A rebate has been granted of 25 per cent. on the tickets of commercial travellers on the Central Railroad, on production of a voucher from the Commercial Association of Rio, that

the bearer is a bona-fide commercial traveller. Agents' trunks must pay duty, but it is intended to remedy that abuse, as also the taxes on samples in each port. In the future a certificate of charges will be obtained from the first Custom House entered.

Food Laws of Brazil.

Article 40, Law 428 (December 10th, 1896), prescribes as follows:

Wines, lard, and all other other food substances condemned by the National Laboratory shall be destroyed, and the importers fined 500$000, £31 5s. 0d.

There shall be condemned as injurious to health, *all* food products containing boric or salicyllic acid, inferior alcohol, free mineral acids (sulphuric, sulphurous, azotic, chlorohydric), sulphite, alum fluorates, and alkaline fluosilicates, saccharine, compounds of strontium, and other minerals in the proportion of 15·4324 grains (2 grams) per liter (or 1·0567 quarts) of wine. Hop substitutes in beer, as quassia, absinthe, aloes, etc. Also any essentials prepared with ethereal oils, colouring matter prepared from coal tar, and of a lead base; mercury, copper arsenic antimony, or *any other substance* which science has recognised as injurious to health. The importation of artificial wines is prohibited under *all* circumstances. Wines with more than 20 per cent. of alcohol may have four grams of sulphate of potassium per liter.

In 1898 and 1905, additions were made to the list of prohibitions, including adulteration, purposely so made, of wines and spirits, and also naturally generated noxious properties, *due to chemical re-action on hops in transit, etc.*

Immense quantities of beverages of *all kinds* have been condemned, owing to their containing salicyllic acid,

excess of sulphates, colouring matters (aniline), and free sulphurous acid.

Among other products destroyed, have been meats (*particularly hams*), preserved vegetables, sweets, and fruit preserves, butter (containing boric acid).

Analysis (fee 25/-) is obligatory of every kind of food or beverage sold within the country. The fee is liable to be increased, in case of extraordinary circumstances.

Subsides, etc.

Congress is asked (1908) to grant an annual subsidy to individuals or syndicates who may put into wheat cultivation at least 200 hectares (or 500 acres) of land for five years. This subsidy is 15 contos, equals £937 10s.

The President of the Republic is authorised to grant a subsidy, at the rate of £250 per kilometer (0·62 mile), to companies or private individuals building roads, and organising automobile services for passengers or goods between two states or across one only. The roads shall be made in accordance with Government regulations, and the subsidy shall be paid when 120 kilometres have been completed, inspected, and approved.

A Bill has been introduced in Congress, to grant four per cent. interest to the first five iron works employing national materials, to be increased to six per cent., if Brazilian coal or other combustible is used. In connection with this it must be noticed that very encouraging experiments have been carried on by Dr. Arthur Barbosa, with an electric furnace at Ouro Preto. The expenses of installation, amounting to £4,370 were authorised by the late Minister of Industry.

Subsidies have also been granted by the State of Rio Janeiro to a firm commencing the manufacture of paper from the Piri-Piri (Papyrus Brasilensis), a reed growing

all over the swampy lands at the edge of the Bay of Rio (north and west), also to producers of silk, cotton, etc.

A Bill has been introduced to exempt from payment of taxes all machinery, etc., for rubber factories within the next three years, also to grant a premium of 50 contos (£3,120) to anyone inventing an economical process for curing rubber.

Flour Milling.

The Legislature of the State of Rio de Janeiro has passed an act granting—to the first company establishing a flour mill—exemption from taxes on exporting wheat-flour *for ten years*, and a free concession of public lands for wheat cultivation.

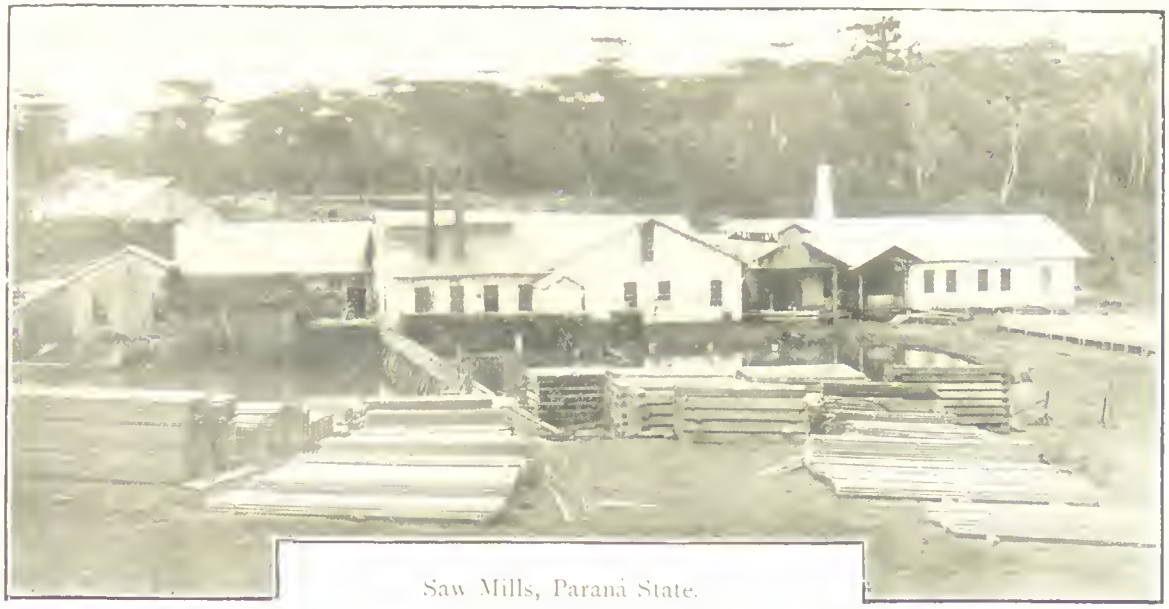
Free entry for all machinery will be asked from the Federal Government.

Shipping Goods.

Weight of both goods and cases (or other covering) should be given separately. Catalogues should be always accompanied (where possible) by samples.

Public Tenders.

No tenders can be accepted from any European or other firm not having an agent in the Republic, and not being officially authorised to do business in Brazil.



Saw Mills, Paraná State.

The State of Paraná is covered with immense forests of the Southern Pine (*Araucaria Brasiliensis*).

A Paraná Railway Station — Loading Timber.

CHAPTER XI.

Finance, Commerce, and Communications.

1909. The Budget for the current year, as presented to Congress, is: Revenue, £28,992,135; Expenditure, £28,714,375. The Foreign Debt (1908) amounts to £72,000,000; and the total National Debt (1907), £156,965,194; the gold deposits in the Conversion Bank (1907) amounting to £10,120,000, as compared with £5,240,000 in 1906.

This bank was organised in 1906, 6th December, to issue convertible notes, at a fixed value of 1/3 per milreis. The gold handed in to be kept in deposit, and not used for any other purpose than in exchange for the above notes, which, once received, shall be destroyed. When the deposits reach £20,000,000, and the notes issued attain the value of 320,000,000$000, the further issue of such cedulas shall cease, and the rate of exchange shall be fixed at a higher rate. In this case notes in circulation will be recalled. The general effect of this measure has been good, and during the last few years immense quantities of the old ordinary notes of low value, have been destroyed, and are being replaced by the new silver coinage. This is a step towards the adoption of a gold standard, and a decided advance in the financial position of the country, which (it may be stated in passing) has never yet failed to pay the interest on its foreign debts, and has long since begun to liquidate the principal.

With regard to the São Paulo State loan of £15,000,000, so highly considered as to be guaranteed by the Federal Government (Presidential Decree of the 10th of December last), this has been subscribed for over 42 times, and such financial wiseacres as Carnegie and Rockefeller figure largely amongst the holders of stock.

These bonds must be redeemed at par on or before the first of January, 1919. The issue was at 92½ per cent., and the object of the loan is the redemption of the balance of the exchequer bonds (1906), and the repayment of any advances against coffee purchased by the State Government. The São Paulo and other Governments agree not to enter into any further engagements to purchase coffee, or to create any type of valorisation scheme, whilst any of the bonds of this (1908) issue are outstanding. The proceeds of the 5 francs surtax on each bag of coffee exported, and of 7,000,000 sacks belonging to the state, and now in bonded warehouses at London, Havre, Hamburg, New York, etc., are calculated to easily cover the loan.

1906.	1907.
Imports, £33,204,041.	£40,400,000.
Exports, £53,059,480.	£54,000,000.
Imports first 3 months,	1907, £9,082,543.
,, ,, ,,	1908, £9,812,907.

The bulk of the 1907 imports are as follows: Great Britain, £12,100,000; Germany, £6,200,000: U.S.A., £5,000,000; Argentina, £3,600,000 (flour and wheat): France, £3,400,000; Portugal, £2,200,000 (wines). Exports to United States, £17,000,000 (principally coffee): Germany, £9,400,000; Great Britain, £8,600,000: France, £7,000,000; Belgium, £2,800,000; Holland, £2,000,000.

The most noteworthy thing with regard to the imports is the gradual advance of Germany, and the great loss of France, and the *comparative* decline of British trade with Brazil. In another place will be found the reason of this, so no comment is considered necessary here.

The leading articles of export were: Coffee, £28,400,000; rubber, £14,000,000; cocoa, £2,000,000; cotton, £1,700,000; yerba maté, £1,600,000; tobacco, £1,200,000, and sugar, £634,000. A decrease in rubber, owing to decline in prices, as well as in cocoa, due to same cause.

Coffee Exports.

1906-07—20,190,000 sacks (record).

1907-08—11,133,000 ,,

Flour.

The tariff concession of 20 per cent. on United States flour has been of little benefit to that country, as the Argentine Republic dominates this market, her exports to Brazil having increased from 37,000 tons in 1902 to 122,000 tons in 1906.

Imports of flour from the United States decreased from 46,000 tons to 24,000 tons, in the same period. Ninety per cent. of the wheat imported is of Argentine origin.

Rubber.

Exports in 1906 were 37,000 tons, and 1907, 40,000 tons.

Cocoa.

Total crop (1907), 60,000,000 pounds, thus leading amongst the world's producing countries.

Production—Herva Maté.

1902 — 41,928,586 kilogrammes.
1903 — 36,129,555 ,,
1904 — 44,162,052 ,,
1905 — 41,119,930 ,,
1906 — 57,716,503 ,,

Maté is worth about 9d. per lb. (wholesale) in England. This includes freight and dock dues, and there is no customs duty on it in England.

The principal consumers are Argentina, Uruguay, Chile, Italy, France, Portugal, Germany, and Belgium.

Industries.

In the Republic there are (1908) 2,378 industrial establishments in Brazil, with 123,931 employees. A capital of some £37,000,000. Of these, 584 are in Rio State, and 551 in Minas Geraes, and in São Paulo 323.

The principal industry is cotton manufacture, and there are 137 mills in this business, with 41,018 workpeople. All of these are paying large dividends, and increasing their output. All the raw material used is Brazilian.

Foreign Banks in the Republic.

London and River Plate Bank	... capital	£2,000,000
London and Brazilian Bank	... ,,	£2,000,000
British Bank of South America	... ,,	£1,300,000
Brasilianische Bank für Deutschland	,,	£500,000
Banco Commerciale Italo Brasiliano	,,	£300,000

Paper Mills.

Two or three only in Rio and São Paulo, making coarse wrapping paper and cardboard from refuse of sugar cane, grasses, reeds, etc., the most useful plant being the pirí-pirí, or papyrus Brasiliensis.

India-rubber Goods.

There are no works of any kind engaged in making waterproof coats, boots, or goloshes, or any other description of India-rubber articles. 15 per cent. export duty is charged on raw rubber, and at least 50 or 60 per cent. on manufactured goods entering the country, of which a very large quantity, indeed, are used.

There are openings for biscuit, fancy soap, starch, and chemical works, box makers, canneries, steam laundries, and saw mills.

There are no steam fishing boats, no piano manufacturies, or factories where jams, jellies and marmalade are made on English lines, although the consumption of the best European brands is large and increasing.

There are, in fact, openings for all kinds of factories, works, and mills, and inducements are offered by various municipalities, such as free sites, lighting, and power for a period, and exemption from local taxes. A nominal duty is charged on machinery for manufacturies, and in many cases it is admitted entirely free.

Public Works.

The port works of Rio de Janeiro, Santos, and Bahia are being carried out with despatch, and those of Pará are begun, and the works at Rio Grande do Sul and Victoria will speedily be inaugurated, as well as those at Pernambuco. The latter will, without a doubt, prove of the

greatest benefit to the commerce of that port. Those of Santos, when finished, will include 2½ miles of quay, with rail alongside, and deep water at any state of the tide. The new market, opened December 14th, 1907, at Rio, covers an area of about 24,000 square yards.

With regard to iron products, cotton piece goods, and food stuffs, it is probable that the imports will decline, as the natural tendency of the country is to supply itself. The greatest field for European energy is in the employment of capital, in the Republic. The return on his outlay insured to a judicious investor, is most decidedly far greater than he can expect to-day in England, France, Germany, or elsewhere. Brazil urgently needs men and money. See the *Financial Review of Reviews*, for March, 1909.

Business Pars.

In order to do business successfully in Brazil, several things are necessary. First, the goods sold must be of a high grade, and before exporting, a visit should, if possible, be made to the country, or the consular reports (both British and North American) carefully studied. Catalogues *must* be in Portuguese, and a clerk employed who writes and translates that language correctly.

Representation on the spot, by a good traveller knowing the country, is essential, and the short-sighted meanness of the common exporting houses is strongly condemned. First class German houses pay their men equal to £60 monthly, with commission and travelling expenses, *as incurred*. This may amount to £2 or £3 daily. Hotel charges are not less than 12/6, and porters and baggage charges are proportionally high. Every pound of luggage put in the brake van pays. Credit is also necessary for at least three months. Packing requires

the greatest care and attention, and, as suggested by the results of experiments made in the sewing machine and phonograph trade, a stock may be advantageously carried at a central depôt (Rio de Janeiro), and goods sold on monthly payments. Singer's charge 5$000 a week (6/3) for hire of machines. Almost any goods can be sold in this way, such as musical instruments, furniture, ornaments, etc. A common way of doing business locally, is to form a club of 60, 80, or 100 members, and draw weekly chances for clothing, jewellery, etc. Probably the best way of doing a large and profitade trade in Brazil is to open locally with the latest novelties, and employ Brazilian salesmen, under European supervision. If travellers are sent from England they must be good men, tactful, sympathetic, well read, gentlemanly above all, and possessed of tenacity and patience, and should be *well paid*, and properly supported.

Transatlantic, Coastal, and Fluvial Navigation.

Steamers leave weekly from Southampton or Liverpool to Rio de Janeiro, Santos, etc. The Royal Mail Company leaves Southampton (Fridays) most weeks, at 12 noon, reaching Pernambuco (via Lisbon and Madeira) in 13 days (10 days from Lisbon), Bahia 14¼ days, Rio in 16 or 17 days, and Santos 18 days. The Pacific takes the same time from Lisbon. The Messageries Maritimes steamers leave Bordeaux alternate Thursdays, and reach Rio on the same day, or before, as the Pacific steamer.

The Lamport and Holt Company runs cargo steamers from Liverpool and London, the Holland Lloyd from Dover (monthly), and the North German Lloyd from Antwerp, and the Hamburg South American Line from

Southampton (with some fine steamers), 18 or 19 days passage to Rio. There are four Italian lines from Naples and Genoa, and a French line from Marseilles. Some of the Italian steamers are quite modern, and make the voyage from Italy in 14 or 15 days. The Lloyd Sabaudo has some 14,000 ton ships running 19 knots per hour, and making the journey from Genoa to Santos in 13 days. There is also the Booth Line, Liverpool to north of Brazil (Pará and the Amazon), and three lines from New York and two lines homewards (New Zealand Shipping Company and Shaw Savill), except in winter, and a line of French steamers (very small boats) from Havre (Chargeurs, Reunis), and a large steamer or two of the same company (homeward). There are many lines whose steamers call casually, or outward bound, but the above are the only regular passenger-carrying steamers. The Royal Mail and Pacific Companies have now fine boats, 10,000 to 12,000 tons, fitted in the most luxuriant style, and having accommodation for 200 or 300 first class, 100 second class, and 1,000 third, many of the latter being berthed in cabins, with two to eight bunks. Of the foreign lines, the Italian steamers are best fitted for steerage passengers, as the Italian laws are most severe as far as regulations for emigrant ships are concerned.

Coasting and other Vessels.

As we have seen the whole of the Brazilian coasting steamers sail under the national flag. In 1904 there were 336 steam vessels, of 296,000 tons, and 541 sailing craft, displacing 300,000 tons. Since then progress has been rapid. The principal line is the Lloyd Brasileiro, with nearly 60 steamers, some of which are 4,000 to 6,000 tons. This company has services to New York in one direction, and to Chili in the other, goes direct to Cuyaba

(Matto Grosso), and calls at all the ports of any size from Pará southward.

There is the Amazon Steamship Company operating 40 small vessels on the great river and its tributaries.

Other companies are the Companhia Costeira, Cruzeiro do Sul, Freitas, Companhia Pernambucano, Companhia Grão Pará, Esperança Maritima, Companhia Bahiano, and the Viação, Central do Brasil, besides other smaller lines.

In 1905 there were in all 26,115 vessels flying the Brazilian flag. In this year more than 10,000,000 tons of shipping entered national ports, all belonging to the country.

Further developments may be expected with regard to transatlantic voyages by the Brazilian Lloyd. An increase in the speed of the British, French and German vessels, now making this voyage, is likely to be called for in the near future, as the present mileage (some 320 to 350 daily) is far from being adequate. It is proposed to call for tenders for a contract speed of some 17 knots per hour, thus shortening the journey from Lisbon to Pernambuco to 8 days, to Rio Janeiro $10\frac{3}{4}$ days, or from Southampton to Rio, a distance of 5,034 nautical miles, to 12 days 7 hours steaming, or with stoppages at Cherbourg, Vigo, Lisbon, Madeira, Pernambuco, and Bahia, to about 14 days.

Railways.

The total length of Brazilian lines in 1889, the year of the advent of the Republic, was 8,930 kilometres, equals 5,358 miles. On the 31st of December, 1908, the length was 19,054 kilometres, or about 11,432 miles; 1,020 kilometres, or 612 miles, having been added during the past year. The following are the principal lines in Brazil at the time of writing:—

RAILWAY.	Working.		In Construction.		Surveyed and Projected.	
	kilometres	metres	kilometres	metres	kilometres	metres
Leopoldina (British) in Rio Janeiro, Espirito Santo, Minas Geraes	2351	835	.....	.....	413	.....
São Paulo Ry. (British) ...	139	.....	.....	.....	.....	.....
Oeste de Minas	910	.....	215	.....	.....	.....
Minas e Rio	170	.....	.....	.....	.....	.....
Madeira - Marmoré	.....	.....	346	.....	.....	.....
Mogyana - Soracabana ...	550	.....	.....	.....	.....	.....
Itauná, etc.	963	.....	32	.....	.....	.....
Minas de S. Jeronymo ...	.....	.....	.....	.....	375	.....
Rio Claro	271	.....	.....	.....	.....	.....
Central Rio Grande do Norte	45	.....	11	... ...	252	.....
Baturité	298	.....	.....	.....	.....	.....
Sobral	217	.....	.....	.....	95	.....
Sapucahy	538	.....	74	.....	219	.....
Paulista	788	.....	.....	.....	.....	.....
N.W. of Brazil	92	.....	144	.....	.....	.....
Itaré and S. Francisco ...	416	852	490	.....	245	.....
Victoria - Diamantina ...	153	700	93	300	261	270
Caxias - Araguaya	.....	.....	.....	.....	183	.....
Jaguará - Araguary	282	472	.....	.....	96	.....
State of Pará Railways ...	194	.....	70	.....	.....	.....
Bahia - Minas	376	270	.....	.....	242	600
Botafogo - Angra dos Reis	.....	.....	.....	.....	194	.....
Central da Bahia	316	600	... ...	.....	305	.....
Bahia - S. Francisco	200	.....	.....	.....	.....	.....
Natal, etc.	172	.....	.....	.....	.....	.....
G. Western Railway (British) in Pernambuco, etc. ...	550	.....	.....	.....	.....	.....
S. Francisco	452	310	100	281	.....	.....
State of Paraná	410	.....	.....	.....	.....	.....
State of Rio Grande do Sul	1300	.....	117	.....	500	.....

The above represent the principal lines only, and do not take into account those merely in consideration.

The Madeira-Marmoré Railway has now a section some 30 miles long completed, and 1,300 men are working on the concession. The line from Piedade (across the Bay of Rio) to Theresopolis is now completed, and this summer resort is within 2½ hours of the capital. The altitude, from 900 to 1,000 metres, equals 2,930 to 3,260 feet above sea level, with a European climate. During 1907, 422 miles were added to the railway system of the Republic.

It is now possible to go by train from Rio Grande do Sul to Montevideo (Uruguay), and connections are under way from Sta. Catherina, reaching as far as Colonia (in front of Buenos Aires) in Uruguay, and in a short time the great São Francisco River will be tapped at Pirapora, thus ensuring rail and river connection with the north. Goyaz will be reached by direct rail, probably from either São Paulo city or Rio de Janeiro, and the line will be continued westward. Via São Paulo, the North Western Railway will extend to Corumbá, Matto Grosso, and the Bolivian frontier, and the city of Diamantina, and all northern Minas, via either Rio Janeiro or Victoria (Espirito Santo). In a couple of years the whole of the coast lines will be linked up, from Pará to Rio Grande do Sul, and connections prepared with the Pan American Railway. We may expect in less than 15 years' time to be able to take the train from Rio to Argentina, Uruguay, Paraguay, Chili, Bolivia, etc., and to almost any part of the Brazilian Republic. The development of the mining districts depending on modern systems of communications, many new roads are in course of construction, for the purpose of motor traffic, as well as light railways. In Brazil it is the reverse to Europe, or at least to England, it is (as it should be) the railways that create centres of population and industry.

CHAPTER XII.

Natural History—Fauna.

Fish.

In this chapter I have followed the order in the section "Animal Kingdom" of the great work in Portuguese, *O Brazil*, and commence by studying the ichthyology of the country. It is necessary at this juncture to refer the reader to the wonderful researches made by Agassiz (see appendix).

The food fish of greatest value in Brazil is the pirarucú, inhabiting the rivers and great lakes of the Amazon region. It measures some seven feet in length, and weighs up to 220 lbs. in rare cases, the average being about 120 to 140 lbs. It has an elongated snout covered with large bony plates or scales, the body being cylindrical, with a somewhat flat form laterally. The tongue is large and osseous. This valuable animal takes the place of meat to a great extent, and is eaten dried very frequently, and is seen now and then in the markets of the far south of Brazil. It is caught with a harpoon, in clear water, usually in September and October, and is then salted. The price per kilogramme locally, dried, is from 1/- to 2/-, according to the district. When visible in Rio, it fetches as much as 3/6 a kilogramme.

The tainha (a kind of trench) is found in many parts of Brazil, both north and south, and is caught in vast numbers by means of nets.

The capital (Rio Janeiro), is the principal market for fish, and the greatest variety are offered for sale, sometimes, however, the quantity is exceedingly small, as the

vessels engaged in the trade from Cabo Frio, St. João da Barra, Angra dos Reis, and Paraty, are so small that they are unable to go out in rough weather, or to remain at sea for any length of time.

The principal fishes of the Rio market are robalos, a variety of sturgeon, from 6/- to 18/- each; douradas (dorados), garaupas 3/6 to 6/- a kilogramme; corvinas, linguadas (soles), sardines, badejos (cod), bijupirás, meros, 3/6 to 6/- a kilogramme; mullet (fresh water), pescadas (whiting), xernes 2/6 to 5/- a kilogramme. Beside these there are multitudes of lesser value, and prawns, lobsters, several sorts, various kinds of crabs, oysters, clams, mussels, etc., etc. On the rivers one also finds the surubim, up to six feet long. This is sold dried as a rule, and the price varies from 1/6 to 3/- a kilogramme. There are also bagres, piranhas, trahiras, jundiás, piabas and, to quote Agassiz, thousands of finny creatures entirely unknown in Europe. This savant calculated that there were more classes of fish in the Amazon alone, than in the whole of the Atlantic Ocean. The method of taking fresh water fish in Brazil is not regulated in any way by the appointment of fishery commissoners or other officers. The splendid natural preserves for trout are entirely without inhabitants. Most of the mountain streams are quite fishless, or inhabited by such kinds as lurk in the more sluggish and muddier parts. Where there are good fishing stations, the stocks are decimated by means of dynamite bombs, or several Brazilian substitutes for cocculus indicus, or fishers' berries. By this latter means, sometimes the whole of a stretch of river is devastated.

Considering the extremely high prices quoted for non-game fish, it stands to reason that scientific stocking of rivers with the hardier kinds of trout, such as S. Fario,

would pay well, experiments have been made with carp, in the State of São Paulo, and have met with success. Referring to the salmonidæ, some encouragement for prospective introduction may be found in the fact that many sorts of fly are to be found on the rivers. I have myself encountered various kinds of caddis, in the usual type of case, and undoubtedly the temperature of the water is quite low enough, and all other conditions highly favourable.

Game, other Animals and Birds.

The supplies of the capital, in the way of game, come from the Serras of Tinguá, Estrella and the Organ Range principally, as well as from Barra Mansa, Merity, and as far as Novo Friburgo. Besides rabbits, hares, 2/6 to 2/9 each, deer, pigeons, pacas, and wild boars are occasionally seen. The best game birds are the mucuco, the jacú (penelope), and mutun (cassowary). Many smaller birds are sold in bunches of 20 to 30 different kinds and colours. Amongst these are found toucans, of various sorts, and such others as arapongas, tiribar, guaxes, and bem-ti-vis (I saw you well), the latter so named from its peculiar call.

The forests of all the states, especially far from human haunts, as in Amazonas, Matto Grosso, and Goyaz, are filled with parrots, fetching up to £1, macaws, £1 to £3 10s., sabias, one variety, *mimus lividus*, worth £5 to £7, bicudos, up to £2, canaries, cardinals, love birds, woodpeckers, avinhados (wine coloured), and, of course, the humble swallow and sparrow, owls, various kinds of hawks, urubús (a kind of gigantic raven), the common scavengers more like a vulture than anything else. In Rio Grande do Sul, both black and white swans are

found, as well as herons, storks, ernus, wild ducks and geese, water hens, flamingoes, partridges, quails, etc.

In the sea there are a hundred sorts of fowl, common to other oceans, and some peculiarly local. Pigeons are extraordinarily plentiful in some of the states where leguminous plants abound. In Ceará thousands have been killed in a day or two's sport. Amongst the quadrupeds not mentioned, those especially noteworthy are the tapir, living in the reedy lakes on the top of the coast and other ranges. Sometimes he is hidden in a dense forest of grasses six or seven feet high, and growing in tufts with deep holes between. This unweildy animal is found within four or five hours of Petropolis, or two of Theresopolis, and a couple, or leash of good dogs are necessary to make him move out of his retreat. His flesh is eaten readily (as is that of several kinds of monkeys), and the hide makes excellent harness. When pursued by a jaguar, he rushes with tremendous force through the undergrowth, and in many cases where the great cat has succeeded in lodging on his back, the shock of the encounter with saplings and cane brakes, has not only torn the attacker from his hold but smashed his skull.

The great and little anteater are pursued for their skins, as are also the numerous family of felines, comprising felis onça, felis onça nigra, felis concolor (puma), the ocelot, wild cat, etc. The greater jaguar is hunted in the most courageous manner in Brazil. After being located in a cave or hole, he is pursued into the darkest recesses by his human foe, who is armed only with a long knife, and has his arms swathed with thick cloth. Amongst other quadrupeds we may notice the wolf, fox, marten, otter, ratão (beaver), kinkajou, gambá, and sloth. In 1905 about eight tons of skins of various soats, including those

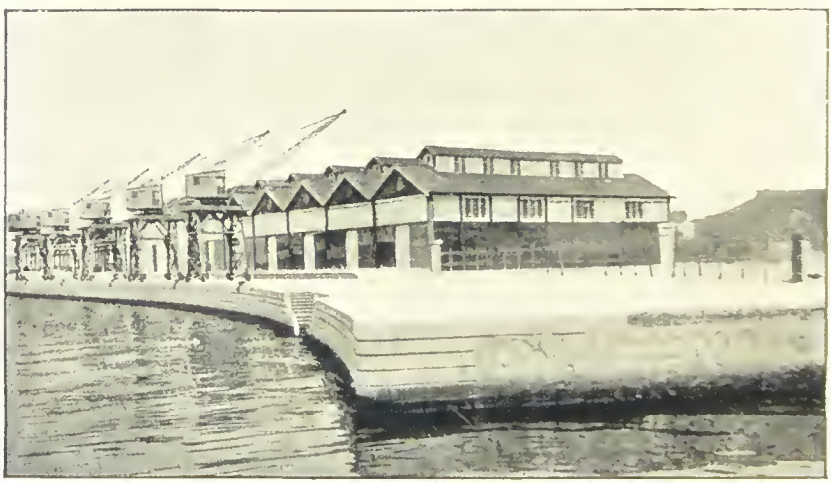
some half dozen species of monkeys, were exported, of a total value of £11,000. The simians, by the way, are well represented in Brazil, but none of them are comparable to those of Africa, as far as size is concerned. Of the domestic animals it is not necessary to treat here, except to say that races of bovines accustomed to hilly districts do well in Brazil, as also goats. Horses are of a small wiry breed, but mules prove best adapted to the northern and central states. Pigs do well in the south, and in Minas, etc., whilst sheep are only suited to some parts of São Paulo, Paraná, Santa Catherina, and Rio Grande do Sul. Domestic poultry, including guinea fowls and Indian game fowls thrive in most places. The guinea fowls are stated to be very useful to keep down the reptiles.

Of the ophidians, the cascavel (rattlesnake), coral, python, boa-constrictor, jararaca, and surucucú, are the better known. The sucury is the water serpent, attaining 50 to 60 feet, and is a terrible plague in the north. There are innumerable myriads of alligators all over the Republic, especially in Pará and Amazonas, a stock breeder killing 2,000 in one season, on the Island of Maraja.

Turtles are not so common on the Amazon as fifty years ago, owing to the wanton destruction in taking them, and thinning out their eggs for the purpose of extracting oil. The turtle is largely used for food, and in Pará at the present time the meat costs some 6/- to 25/- a kilogramme, according to season. There are also six kinds of tortoises which form important additions to the diet of this region. The municipalities of the State of Pará obtain large sums from the taxes imposed on those engaged in the above trade. Oil is extracted from various kinds of lizards, tapirs, and capivarys, but the

Panorama of the City of Parahybuna, Sao Paulo.

Central Avenue, Rio de Janeiro.



The New Quays, Rio de Janeiro.

principal fount of this product is the whale. This mammal is found all along the coast of Bahia, especially near Caravellas, and is sought for in small single-masted sailing vessels, from 40 to 60 feet long, and equipped with muffled oars in addition. These boats are the same shape fore and aft, and with a good wind make from 10 to 12 knots. The crew of each vessel consists of about 11 men. Salaries paid are very small, but for each whale caught, the harpooner gets £6 10s., the steerer £3 5s., and each of the others 12/6. The total number of men engaged in this work is about 900 afloat and ashore. There are from 40 to 50 whaling vessels, those belonging to Caravellas being launches of 15 tons each. The proceeds of 1903 were £30,000, 306 whales being killed. The manatee dugong is also caught for the blubber, but the resultant production of oil is comparatively insignificant.

Fish Glue.

The silurus (catfish) is the one which supplies most of the above, and the price obtained for it in the market at Pará is 3/- per kilogramme, in comparison with 1/6 from other sources.

The exportation of fish glue from Pará and other places in 1905 was 72,429 kilogrammes, worth £15,508.

Feathers, Scales, Etc.

The following are the principal birds furnishing feathers for export:

Emu, parrot, macaw, toucans, humming bird. The most valuable are those from a peculiar sort of heron, and are taken from the head of the male, they are known in England as ospreys, and are worth £62 10s. a kilogramme (one conto of reis), locally. Most of these

feathers (few in number in each bird) come from the northern states. In 1905, 158 kilos 627 grams were exported.

The feathers of the emu are from three to eight inches long, and the best are used in the manufacture of boas. Exportation (1905) 1,983 kilogrammes, value £1,600. Of the feathers from the immense variety of multi-coloured birds, a great many are taken from those bred in the convents, and stripped regularly by the nuns. Exportation 25 kilos, worth £65 only, a great many being used in the country, made up into ornaments, flowers, etc. The scales exported are from the sturgeon, gropers, etc. These are nearly all made up in Santa Catherina and Parahyba do Norte. Flowers are also made of shells, leather, etc. In Rio de Janeiro there are two or three houses making a speciality of ornamental work of all kinds, including butterflies' wings, beetles' wing sheaths, etc., made up into an infinite variety of designs, and costing absurd prices, considering the mite given to the countryman who brings them in. Profits of 200 to 300 per cent. are very frequently made in this sort of business.

Animals for Collections.

The bulk of the stuffed or simply dissected birds, such as toucans and humming birds seem, according to official data, to be exported to the United States and Argentina, at least as far as those are concerned which are not set up and mounted. There are always better prices obtainable locally for natural history specimens, but the demand is very small for the more expensive kinds.

For export: (dead) stuffed and prepared. Alligators two feet six inches fetch up to £1 10s., lizards same length £1 5s., monkeys of various sorts £1 to £1 10s., serpents (three feet and longer) £1 5s. to £2, falcons

£1 2s. 6d., water hens, woodpeckers, humming birds, assorted kinds, £1 2s. 6d. to £1 5s. a dozen, penelopes (jacús) £1 10s., crabs and lobsters, mounted and varnished £1 16s. a pair. Armadillo coverings or shells made into work baskets, etc., etc., up to £2 10s. Myriads of beetles and butterflies and other curious insects are also caught, of which the semiramis up to £7 and £10 for a single specimen is most noteworthy.

More ordinary coleoptera and lepidoptera cost 12s. 6d. to £15, according to the number in a case, and their relative rarity. Amongst the better class of butterflies one may mention numbers of the argante, morphos (four kinds), caligos, heliconidae, danaedae, papilionidae, T. agrippina, darius, codomanus, etc., etc. A class of ants (tanajuras) from S. Paulo are also exported, these are dressed in various costumes and put up in little boxes with a landscape painted in the background. Thus arranged, they sell for 12s. 6d. to £1 a box. These same ants are cooked and sold in large quantities in the interior of the state, and are considered a great delicacy. There are also various bizarre tinted fishes varnished and exported, or sold locally at high prices. Apropos of this, a man came into a shop in Rio in my presence and sold a toucan for 200 reis (3d.) I asked the owner of the store (a personal friend) how much he would sell the bird for when stuffed and prepared? The answer was—10$000 (12s. 6d.)—verb sap.

There is yet room in the capital for a clever naturalist, who is at the same time a linguist (French and German being essential). The proprietors of the small business already exhisting have very little scientific knowledge, and their abilities as taxidermists are rather mediocre.

CHAPTER XIII.

Flora.

Rubber Producing Plants.

According to the great text book "Flora Brasiliensis of Martius," there are 10 species of hevea, besides a similar plant, micranda siphonides; and in Minas, micranda etata, and in Bahia, micranda bracteosa.

In Amazonas exists also the tapurú, the castilloa elastica, and the hancornia speciosa, of some six kinds.

The heveas are true forest trees, reaching at times nearly 100 feet high, with a diameter of 15 to 39 inches. They are without branches for some three-fourths of their altitude. Most of the varieties producing the best and most abundant supplies of rubber are found growing in a humid situation, very frequently in alluvial soil periodically covered by the floods. They are, with the latter mentioned plants, found over an area of a million square miles. Some of them are capable of economic production up to an altitude of 950 feet. The rubber gatherers are hardly in the habit of discriminating between the various sorts, mixing the produce of many trees together, regardless of the quality of the gum. The riches of the valley of the Amazon are scarcely touched. It is sufficient to journey a few miles from the river banks to find virgin forests, and this over a distance of at least 1,000 leagues.

The De Mello Brazilian Rubber Company, formed in London recently, has a capital of almost £500,000. It is estimated that there are 52 companies in operation, with a total capital of £2,000,000. These have been

organised in the two years, 1906-07. A French traveller, Auguste Plane, who made serious studies of the Amazon basin, says that the production of rubber can be doubled whenever necessary, and as soon as the cost of living is decreased, prices of even 1/3 or 1/6 a lb. for rubber will prove sufficiently remunerative.

The tax on exported rubber, in Pará, varies from 15 to 25 per cent., according to the quality. The freights are proportionally high for river transport, never being less than 7½d. a kilogramme. In Manaos the various local taxes amount to 28 per cent. of the value when put on board, in addition to the Pará tax. Undoubtedly the result of such abominable fiscal measures is to encourage all kinds of abuses, and attempts at evasion. As the author of the monograph in *O Brasil* says, such a state of affairs must not, and cannot continue. It means ruination to an exceedingly profitable and great industry. Referring to the other rubber producing plants, we find the tapurú, reaching 80 feet, and having an average diameter of three feet, with a feathery palm like top. The castilloa elastica is a much smaller tree, not exceeding 65 feet high, and 2 feet in diameter. The varieties of hancornia are relatively diminutive, about 10 feet high, and 2 to 3 feet in circumference. In São Paulo the plantations or forests are worked on the share system, the employee receiving usually a third part. The system employed is destructive, as both owner and worker concur in taking from the plant its entire store, not economising the sap in any way.

In Ceará, Piauhy, and somewhat to the north and south, another variety is found, known as maniçoba. Contrary to the habit of the heveas, it is a native of the higher lands of the interior. The leaves are used to feed cattle. Tapioca is extracted from the roots, and the seeds

are in the form of almonds, and either in their natural state, or after the oil has been extracted, are a valuable food for cattle, pigs, and fowls. This tree is fouud as high as 1,000 metres above sea level, but its usual habitat is from 200 to 300 feet in altitude.

Many other entirely different classes of plants are rubber producing, including the wild fig. Plumeria, sorveira, lucuma-laurifolia, platonia-insignis, symphonia-globuluris, and massaranduba (mimusops-elata), a gigantic forest tree, whose timber is very valuable for constructive purposes.

Plants Producing Tannin.

The following are the principal sources of extractives used for tannin purposes in Brazil:

	Percentage of Tannin.
Striphnodendron barbatimão	25 to 48
Acacia angico (bark and fruit)	40
Phyzophora mangle (bark and leaves)	20 to 30
Buranhem	30
Murici guassú	15 to 20
Quebracho vermelha (red)	4 to 16
Ingá sapida, edulis, vera, dulcis	10 to 15
Acacia jurema	8 to 15
Quebracho branco (white)	12
Carapa vermelha	4
Compared with oak (in Europe)	30 to 45

Many plants used in Europe do not possess more than 8 per cent. of tannin.

The barbatimão is the most generally used in Brazil, and furnishes also fine woods for the cabinet maker. In the States of Minas, São Paulo, and Rio Janeiro this bark is extensively employed; but in São Paulo, where

there are more than 50 tanneries, the local supply is insufficient, owing to the devastation of the forest. This applies, more or less, to the other two states, but especially to Rio de Janeiro, where the extraordinary clearances have made a great difference in the wet seasons, the rainy weather coming now, quite out of the usual time, and in volume generally less than heretofore. Many tanneries have had to close down in different parts of Brazil, owing to lack both of hides and tanning material. With improved methods, and great increase in stock of store cattle, this is not likely to occur in the future.

With the barbatimão, some seven to nine months treatment are necessary. The usual price in the State of Minas Geraes is about 1/6 per arroba (15 kilos), or about 32 lbs. There are also five other species of stryphnodendron used in Brazil. Exportation has commenced of various barks to Europe (Germany and Portugal), from Paraná, Rio Grande do Sul, and São Paulo. The embaúba (cecropia-palmata), etc., whose tender leaves are the favourite food of the sloth, furnishes also a large percentage of tannin, as well as being very useful in the manufacture of cordage. The number of plants used in Brazil for tanning is so great that it has been found impossible to quote more than the principal, and most widely used ones.

Fibre Producing Plants.

Undoubtedly one of the greatest sources of wealth in the Republic, it is as yet, perhaps, the least exploited. Everywhere there are myriads of malvaceas, and, doubtless, Brazil is the country richest in the branches of this family.

In comparison with the canhamo (hemp) it is considered that the guaxima vermelha would rival the former, if properly prepared. Many of these latter plants have been used in making ship's cables in Brazil, since colonial days. The urena and the triumpheta are used under the name of aramina.

These plants, in favourable situations, not too dry, produce fibres of eight to nine feet in length. In São Paulo some 12,500 acres are under cultivation, and produce about 800 tons of fibre annually. Nearly the whole is consumed by one factory in the capital of the state. The usual price paid is, roughly, 2d. per lb., and prepared, 6d. to 8d. a lb. The cultivation is carried on near the coast, and some 60 quarts of seed are used to the hectare (2½ acres). The harvest commences in February, and ends in June or July. The principal use of the fibre is in the production of sacking for coffee, 60,000 to 70,000 bags being made monthly.

A group of the malvaceas, known as vassouras, is so persistent and universal in its growth that, if Brazil possessed a department similar to that in the Australian Colonies, they would become *proclaimed plants*. They are, however, very useful, the more delicate fibres making good paper, and the others furnishing material for brushes, ropes, and twines. This family is allied to that of the jute. The one kind that is likely to prove of most value is known as Canhamo Brasiliensis (Brazilian hemp). Very similar to our own flax, it is now known locally by the name of linho *Perini*, from the name of its supposed discoverer. It grows in the valley of the river São Francisco principally, in some places in great profusion, and also in the States of Minas and São Paulo. It appears to be a variety of hibiscus. The stalk grows to the length of 10 to 13 feet, without branches. The

strength of the fibre, as compared to hemp, is about four to three. Cultivation on a large scale has been commenced at Rodeio, in the State of Rio. Production of 1,000,000 square metres of land, three crops yearly, 380 tons of best quality, and 2,214 tons of second quality fibre. Prices offered in Europe £40 and £12 respectively, per ton. The family of bromeliaceas present also varieties of pineapples, suitable for textile fibres. The north of the State of Rio, along the coast, is covered with this (bromelia lagenaria) type for 60 square kilometres. The exploitation of this plant is purely local, in spite of the great opening in Europe for the fibre. A London house offered £30 a ton, and asked for an immediate lot of four tons for experimental purposes. Price offered at Hamburg was £15 a ton.

In the family of amaryllidaceas we must note the fourcroya gigantea and fourcroya cubensis (pita).

Both these plants are common in Brazil, and may be found at all altitudes. Length of leaves, 10 to 12 feet.

Compared with sisal, the following figures demonstrate the value of this plant :—

Dimensions of leaf.	Weight.
Sisal, 4 to 6 ft. × 4 or 5 in.	1½ to 2 lbs.
Piteira, 8 ft. × 7 to 9 in.	3 lbs.

Weight, 1,000 leaves.	Fibre, 1,000 leaves.
Sisal, 1,500 to 2,000 lbs.	50 lbs.
Piteira, 2,500 lbs.	50 lbs.

The sisal lives 10 to 12 years, the piteira, 12 to 16 years.

Pita requires three years to mature. The minimum yield per acre is 1,500 lbs. of fibre, worth £13. An estate of 1,000 acres (400 hectares) would produce

£13,000 after three years. Expenses calculated in planting 5,000 acres, machinery, freight, etc. £1,200

Wages, etc. (4 years)	10,000
Instalment, etc.	1,800
Depreciation, etc.	100
Freight, etc.	6,000
	£20,000
Expenses, first 4 years	£20,000
Result (one crop)	60,000
Profit	£40,000

If we add £5,000 to expenses, and allow no crop in the fourth year, we have then—

Five years' expenses	£27,500
One crop, result	60,000
Profit	£32,500

Calculating £20 per ton, and a minimum crop of 3,000 tons per 5,000 acres.

Experts calculate the crop, after three years, at £13 per acre, thus 5,000 acres = £65,000.

An ample margin is thus shown, and land is not wanting for planting. If we reckon value of land at 5/- an acre it will be an outside estimate.

In 1904 the price of pita (mauritius hemp) was from £25 to £35 a ton (London). The exportation of cocoa fibre, piassava, etc., is very far from being equal to the demand. The total amount in vegetable fibres, in 1905, coming to 7,377 kilos (less than 7½ tons), valued at about £300.

Kapok (paina) is another vegetable substance which is produced in Brazil, from the fruit of the various families

of paineras. The best quality paina-branca (white) is capable when used in life-belts, of supporting 30 to 31 times its weight, as compared with the kapok from Java, 26 to 28 times its weight. The painera is abundant in the States of Espirito Santo, Rio de Janeiro, Minas, São Paulo, etc. In spite of the excellence of the production of this class of tree, the exportation is infinitesimal. Most of the paina is used in Brazil in stuffing mattresses, pillows, cushions, etc.

The above are only a few of the plants which occur in profusion all over the Republic, and offer a hundred different kinds of utilities to the world of commerce. The thing which is most astounding is not the extraordinary richness of the vegetable kingdom in Brazil, but the meagre way in which these sources of wealth are utilised. Fortune awaits any capitalist who will venture to take up the study of any one of a thousand different kinds of cultivation, or even the commercial exploitation of those multitudinous species growing wild in every state, from one end of the Republic to the other. The very cursory glance given in the previous pages to this subject is entirely inadequate to give the reader any idea of the wealth nature has so bounteously bestowed upon this fair land, only now beginning to take its proper place amongst the productive countries of the world.

Maté (Ilex Paraguayensis).

Maté is to the Southern Republics, Chili, Paraguay, Brazil, Uruguay, and Argentine, what tea is to the European. It is even more drunk in many places than its rival, coffee. Here we find a plant which has its habitat exclusively in the temperate regions, at an altitude of from 1,500 to 3,000 feet above sea level. Its Latin name is, of course, due to its being found, probably, in

the first instance, in Paraguay, but the State of Paraná is the great seat of its exportation.

The tree, or rather bush, is some 12 to 20 feet in height, and it rarely reaches 30 feet. It belongs to the hollies, but is without spinous leaves. The area over which it is distributed in Paraná alone is some 140,000 square kilometres, but it is found in six other states, as well as in a small part of Argentina and Uruguay, near the Brazilian frontier. The leaves are prepared in two distinct ways. (1) Ground up into powder to be used in the cuia (or gourd), and the decoction, made with boiling water, is sucked up through a perforated tube. (2) Prepared as a sort of tea in flakes, with some fine stalks, and taken in cups, like the Chinese or Japanese liquor. The infusion is of a green colour, and when brewed in a pot, the Brazilian custom is to put a piece of glowing charcoal into it. The effect is to turn the liquor into a dark brownish green, and undoubtedly much stronger. It improves also by boiling. Maté has one great advantage over tea, and that is, that two brewings may be made with the same handful of herva, and sometimes the second is stronger than the first. Its greatest quality is in its effect on the human system. Take a good bowl with a crust of bread at 4 a.m., and you may work in the harvest field till noon. It has no aftermath, no injurious influence on the digestive organs, and its action is stomachic and laxative. During the war with Paraguay the soldiers marched and fought day after day without any food but maté.

I have noticed a remarkable fact with relation to its medicinal properties. In the Argentine cattle lands, an enormous quantity of meat is consumed, indeed, the staple diet of the people is flesh. I have myself breakfasted on huge beefsteaks for months together, seven days

a week. The beef, however, goes together with the maté, usually a *bombilla* (in the cuia or gourd). The bombilla is the tube, spoon-shaped at base, and commonly of silver, through which the maté is drawn.

The cowboys are great beef eaters, but rarely suffer from the effects of the diet. Certainly the maté is a blood purifier, at least taken in native fashion, and without sugar. This beneficent herb can be placed on the market here in England for 6d. a pound, freight from Antonina (Paraná) comprised.

Compared with tea or coffee the analysis is calculated as follows:

Component Parts 1,000.	Green Tea.	Black Tea.	Coffee.	Maté.
Essential Oil	7·90	6·00	0·41	0·01
Chlorophylla	22·20	18·14	13·66	62·00
Resin	22·20	36·40	13·66	20·69
Tannin	178·00	128·80	16·39	12·28
Alcaloids, theine, caffein ...	4·50	4·30	2·66	2·50
Extractives	464·00	390·00	270·67	238·83
Cellulose and fibres	175·80	283·20	178·83	180·00
Ashes	85·60	25·61	25·61	38·11

Maté is a tonic, a nutrient, stimulant, and diuretic. Its influence is almost magical on soldiers on the march, and in all cases of prolonged physical or mental work. Not a *single* authoritative voice has been raised against its use. A chorus of scientists has extolled its virtues to the skies, yet in England to-day it is almost unknown, being found only in herbalists shops, or amongst the drugs and nostrums in the chemists stores, and sold at an extortionate price, usually 3/- per lb.

Each bush produces some 200 lbs. of leaf and fine stalk, which is reduced in the factory to about 90 lbs. of herb. In its natural state the maté is found in company with the monarch of the temperate zone of Brazil, the magestic and graceful araucaria (the southern pine). The only cultivation the bush receives, under these circumstances, is periodical clearing the obstructing growths from its vicinity. This is done every two or three years, under favourable circumstances. The harvest is collected from May until August. The branches measuring less than half inch in diameter are nearly all cut down, and then the finer twigs and leaves separated from the mass. The leaves are then submitted to the action of a quick fire for a moment, and afterwards prepared in the factories, and packed in barrels for export. The tea is also sent out in packets and tins, principally to Montevideo, Buenos Aires, and to Chili. Exportation during the last quarter of a century has increased at least 300 per cent. The most encouraging thing about this trade is its development without artificial aid, solely through the excellence of the article. The annual consumption in the State of Paraná, per head of the population, is about 10 lbs. The exterior trade is carried on through 14 ports, in six different states, but of the total, Paranáguá and Antonina between them account for more than one half. It is calculated that the bush requires three years before being fit for harvest again, if the precaution is taken of leaving a few branches, covered with leaves at the top, to protect the rest from the elements. The price of the tea put on board transatlantic steamers, works out at about 3d. a pound, and some allowance must be made for trans-shipment, for the German liners calling at the Paraná ports do not touch at a British one en route to Hamburg. The price stated previously, 6d. a pound,

amply covers all costs of freight, etc., and no duty is levied on this herb in British custom houses.

Vegetables, Oils, and Wax.

The castor oil plant, although not indigenous to Brazil, has adapted itself locally with great success. In spite of the most rigorous methods taken to extirpate it, including fire, once introduced into a district it is never destroyed, and is considered as a plague. Largely used for many years as an illuminant, it is employed more and more as a machine oil, mixed with other oleos, or alone. The Leopoldina Railway Campany has established a factory for the purpose of extracting the oil as a lubricant. There are some 12 or 13 more mills distributed over the different Brazilian States. Several other plants of the same family are common in the country.

Copaifera officinalis (copaiba). There are 20 species of this family of leguminosas, of which some seven are found in Brazil. The oil is extracted from the trunks by means of an incision, and in Bahia a suction pump is employed. The limitation of the tree is about 20 quarts. The principal places of export are Bahia, Maranhão, Pará, and Manáos, and the largest importing countries are the United States, Great Britain and Germany.

Brazil nut oil, furnished by the Brazil nut of commerce, and kindred seeds. Contrary to many of the trees of the Amazonian region, the chestnut (as it is called in Brazil) grows best on high and dry lands, and forms extensive woods of lofty trees of great girth. The nuts are contained in a shell about the size of a cocoanut. Those called sapucaiás, produce a fruit excelling the Brazil nut in quality, and worth two or three times the former. The State of Pará has almost a monopoly in the exportation of the Brazil

nut. The extraction of the oil is generally performed locally, for use in the country. The whole of the woods are uncultivated, and the collection of the nuts is fraught with great difficulty, owing to the altitude of the trees.

Carnaubeira (copernica-cerifera) is found as far south as Bahia, and grows sparsely in the more temperate parts of Brazil.

Of this palm Humboldt speaks as the tree of life, and its wonderful utility may well entitle it to lay claim to that designation. The roots are useful in skin diseases as depuratives, the leaves make excellent cordage and twine, and are commonly employed to stuff mattresses and pillows; the fruit is agreeable and nutritious, the timber makes fine furniture, taking a high polish, and resists putrefaction so well that it is in use in a hundred different ways in salt and fresh water. The young shoots are the palmito or cabbage palm, the sap of the adult, palm contains a very wholesame kind of tapiocá, and makes a pleasant fermented drink, whilst even the stalks and other residues furnish food for cattle. The principal product of the tree is, however, the vegetable wax, which is found in the young leaves. 100 leaves from one tree give about 4 lbs. of wax on an average, but under good conditions, as much as 13 lbs. has been obtained. The value, per kilogramme, is about 2/- (1905). The exportation of this wax, the same year, was valued at less than £200.

Cocoanut palm. In its green state the nut contains more than a pint of liquid. The substance, in a gelatinous state, is highly considered in Bahia, and should be much better known in Europe than it is. The nuts, which are so common and cheap in the English markets, are in comparison with the green ones, not at all palatable. The production on the spot of cocoanut butter, fibre and

oil seems to be needed, and the enormous quantity of plantations existing might find a ready market for their nuts. As it is, freights are so high, and consumption so small, that a cocoanut costs twice as much in Rio de Janeiro as it does in London. The value of each nut on the spot (Pernambuco or Bahia) is about 1¼d.

Timber.

Brazil is undoubtedly the country possessing the richest store of valuable woods. The majority are so hard that furniture made from them resists the worm. Many possess perfumes as aromatic as any invented by modern science. In spite of the wonderful exuberance of nature, especially in the north, and the unequalled fluvial system of those most favoured states, the melancholy fact must be confessed that it does not pay to export any but the finest timber. Not only this, but as yet an enormous quantity of pine is introduced into the country for the purpose of box and case making, general carpentry work and building construction. This is the case even at Belem (Pará), where the forest is at the gate of the city. The explanation of this lies in the fact that freights are prohibitive, a cargo sent to Liverpool hardly paying cost of transit, and that the more beautiful forest trees are growing isolated. One finds, in a great wood, a hundred different kinds of huge and stately trunks, hardly two alike in proximity. The all pervading quest of rubber renders labour unavailable, and again some of the timber is so hard that it resembles iron rather than wood. The future of such trees as the massarandubá is in the hands of the railway constructor, the enduring qualities of the wood making it very useful indeed for sleepers. The so-called cedar of Brazil (cedrela odorata) is found throughout the Amazon region, and is principally used in

cabinet work, and internal fittings of houses. The only exportation in 1906, worth mentioning, was to Portugal. From Manáos, £5,800, and from Pará, £9,900, this latter paying in exportation taxes £567. The two woods predominating were the acapú and pau amarella (yellow wood), for flooring purposes, as the dark and light colours alternating are very pleasing to the eye. Many of the finest houses in Lisbon are floored with these woods.

The monopoly created at the great European market (Hamburg) is considered to be one of the principal causes of the failure to develop the timber trade. It is stated that a closed ring of buyers fix the prices paid to the exporting firms, and then deal for whatever is needed amongst themselves. The greatest consumers of timber are the Brazilian railway companies and the sugar mills. Two lines in São Paulo alone, burnt wood to the value (locally) of nearly £100,000, in the year 1904. Some idea of the extraordinary state of affairs in Brazil may be gathered from the fact that in the capital of the Republic it is sometimes cheaper to buy coal imported from England than wood, which is to be found within a couple of leagues of the metropolis. In the vicinity of the city it has been found necessary, not only to prohibit the destruction of the forests, but also to form reserves, and plant some of the most useful sorts of the nearly two thousand varieties of trees indigenous to Brazil.

Medicinal Plants.

Quinas, furnishing cinceona, or Peruvian bark. There are no less than 14 or 15 kinds, native kinds, and the true Peruvian cinchora has been introduced with great success. Angelica, quassia, gentian, centaury, rue, and many purely Brazilian species of bitter tonical plants abound in all the states.

Tonic stimulants. The principal one (maté) has already been described.

Depuratives. Salsaparrilla is the best known and widest distributed, many rivers having their water impregnated with it. Amongst others of the 30,000 Brazilian plants may be mentioned the capsicum, mimosa, cashew, ipecacuanha, many violaceas, convolvuli, jalapa, lyrios, sorghum, urtigas, jaborandi, etc.

Ornamental Plants.

Orchids naturally take pride of place amongst the above, Brazil occupying the chief position in the world with 1,059 varieties, most having large and beautiful flowers.

The cattleyas and lœlias are found principally from Bahia southwards, in the coastal ranges.

Pará exports mostly the C. eldorada, C. superba and oncidium lanceanum.

Bahia—C. aclandii, C. ameythst oglobossa.

Pernambuco—C. labiata, C. graniclosa, miltonias.

Espirito Santo—C. labiata, C. harrissonia, C. schofieldiana, C. schileriana, C. crispa, lœlia-xantina, L. tenebrosa.

Rio de Janeiro—Lœlia perrinii, C. harrissonia, C. crispa, C. lobata, C. guttata and miltonias.

Minas and São Paulo—The same classes.

Santa Catherina — Lœlia-purpurata, lœlia-elegans, C. intermedia, C. leolpoldü.

Espirito Santo and Santa Catherina boast of the rarest varieties of these beautiful plants, some, as the cattleya autumnalis alba, being worth £50, or the C. warnerii £200. Amongst the other noteworthy plants are the begonias, cannas, almonds, cardamum lilies, hortensias magnolias, verbenas, jasmines, lycopodiums,

bougainvilleas, camelias, victoria regia, waterlily, heliconias, amaranths, and all flowers common to Europe, besides others without number. The plateaux at an altitude of some 6,000, 7,000 feet which are found in several places in the States of Minas and Rio de Janeiro, are remarkable for a flora of a distinct nature, amongst which bulbous plants predominate, growing very frequently with the roots almost entirely exposed. In these elevated regions, the climate is truly temperate, and most of the flowers are found blooming in the spring or early summer. The fuchsia, which is a sort of climbing semi-parasite in southern Brazil, is not found much above 3,000 feet, but between 2,600 and 2,900 feet is abundant in most places.

Dyes, Resins and Essences.

The quebracho colorado of Argentina is replaced in Brazil by several trees of the Brazil wood type. Some dozen or more producing a red dye, including three kinds of dragons blood trees.

Two anils with fine blue colours, both creepers (cissus tinctarea and cissus sicyoides) also the indigo plant itself.

Some of the fuchsias give a black, and other trees, as the ludwigia - caparosa and various bromeliaceas, a brilliant yellow. Gum arabic is obtained from acacias, cashews, etc., and copal from hymenæas. Resins are produced from the amyris-clemifera and the hedwigia balsamifera. Of the essences the vanilla plant is found nearly all over Brazil, especially in Minas Geraes. Cinnamon grows exceedingly well in Pará and Maranhão, and the famous tonkin beans are common in the northern forests. Neither of these two latter plants have been cultivated to any extent, although the States of São Paulo and Paraná have made attempts, under Govern-

ment supervision, to produce vanilla on a commercial scale; and the latter state has published directions for its successful culture. It may safely be asserted that there are many plants producing extremely valuable essential oils and extracts, that would repay a hundred fold the man who took up their cultivation in a scientific way. It is just the things which are neglected that offer the best openings in Brazil. Undoubtedly the state most advanced in agronomical studies is São Paulo, possessing as it does at least two finely equipped and managed experimental stations. Here also meteorological phenomena are adequately registered, and the results profited by. The Paulistas term themselves, perhaps with some justice, the Yankees of Brazil.

CHAPTER XIV.

Agriculture — Part I.

Coffee, Sugar, Cotton, Cocoa, Tobacco.

Coffee.

Coffee is grown in Brazil, principally in São Paulo, Minas, Geraes, Rio de Janeiro and Espirito Santo. The plants flower from September to December; earlier in the north and later in the south. The crops are gathered from April to July or August, or during the dry season.

Although many parts of the more central states (coastal) are adapted by nature to the growth of this plant, the fazendas have been reduced to less than half their previous extent, owing to the state of the European market. The soil of the coffee producing zone is of a red colour, and is presumed to be similar to the Devonian in England. Sember says that it is formed of decomposed lavas mixed with decayed vegetable growths. The element that seems lacking in most of the soil appears to be the oxide of cal (or lime, this, however, does not appear to prejudice the coffee plant, as it requires but a fourth part of this chemical constituent as compared with wheat. Experiments carried out with samples of earth from Minas, Rio de Janeiro and São Paulo, demonstrate that the composition shown by analysis does not agree by any means with the result obtained by harvest; after all the most exact method of proving the suitability of the soil. The data that one finds infallible in cold ground in

Europe, are hopelessly at fault in the cultivated zones of Brazil. Whilst in England one finds a maximum depth of soil of some 24 inches, in relation to efficacious agriculture, in São Paulo there is from three to five times as great a profundity. I have myself seen a solid wall of earth at least 150 feet high, and decomposition is said to have been effected in many localities to the depth of 1,000 feet. All scientific travellers in Brazil remark this extraordinary phenomena.

With regard to the selection of seeds for the propagation of coffee, the greatest care is taken now-a-days. From 75 to 90 per cent. of those planted survive. The sites selected are generally cleared as soon as the summer rains have diminished, or ceased, at about the end of March. The fallen trunks and branches are left to dry until August, when the whole is set on fire. At the beginning of the wet season the young plants (previously brought up from seed) are selected and put in. The planting continues from November to February. The first crop is produced in the third year, and the system employed in São Paulo for the new plantations is sufficiently favourable to the colonist. By Decree No. 1,090 of 9th of January, 1903, the situation of the planter became more untenable, and the Valorisation Scheme was proposed as a remedy. This as we have seen is superseded, 1908. Generally speaking, the new arrival (immigrant) has a definite contract with his employer, and his salary or share of profits is the first charge on an estate. He finds a house built, and a lot for his own use, already cleared. Between May and September he can earn 5d. to 7d. a half sack (or one and a half bushels), picking the berries, and in the case of a large family, the earnings are quite substantial. Many Italians being able to return home for three or four months each year.

Another method is to pay for each 1,000 plants tended, or hoed round, from £1 to £1 5s. This operation is performed some five times in the year. Ample time is left to the colonist to cultivate his own lot, for which he pays no rent whatever, neither does he for the house. Some of the planters adopt a different system, paying a third of the production to the colonist, and advancing him means for his subsistence until after harvest. The cost of marketing fifty kilos of coffee works out at about the same number of francs, or with interest on capital and depreciation reaching 66 francs for a fair grade of berry. This amounts to 6d. per pound in round figures. From 1890 to 1895 coffee reached the high water mark of 97 francs, and once or twice even 130 francs. The lowest point touched (1900-1905) was 40 francs. Whilst the present state of affairs continues the virgin lands in the State of São Paulo alone (some 2,500,000 acres) must be reserved for other kinds of cultivation. Various measures have been taken by the planters themselves, including the burning of immense stocks of coffee. One great grievance the planter has is the fact that his best efforts to produce a high grade of berry bring profit, now and then, not to him, but to the (fortunately rare) dishonest European merchant, who buys at the lowest figure, and sells the Brazilian production at the price, and under the name of Mocha or finest Java. I asked recently the manager of a large wholesale house, what stock of Brazilian coffee he carried, and the reply was—*none*. One can only judge that he was either an awful liar, or didn't know what he was selling. The diagram below represents the estimated world's crop 1907-8, and speaks for itself. That of 1906-7 was the greatest on record, totalling 15,392,000 bags from Santos alone, and 4,234,000 from Rio de Janeiro.

EXPORTS OF COFFEE FOR YEAR 1907-1908.

In bags of 140 lbs.

BRAZIL.

SANTOS—7,203,000 bags.

RIO—3,240,000 bags.

BAHIA & VICTORIA—690,000 bags.

ALL OTHER COFFEE PRODUCING COUNTRIES:

Central America, Mexico, Guatemala, Honduras, San Salvador, Nicaragua, Costa Rica, etc.— 2,025,000 bags.

Venezuela, Colombia, Ecuador, and Peru— 725,000 bags.

Dutch Indies, Java, etc., British India and Manilla — 430,000 bags.

— Haiti—405,000 bags.

Cuba, Porto Rico, and British West Indies; Africa, Arabia, Mocha, etc.—275,000 bags.

In addition to the three francs surtax on each bag of coffee imposed for a period of six years by the Convention of Taubaté (São Paulo), signed by the Presidents

of São Paulo, Minas, and Rio in 1906, the Government endeavours to prevent the exportation of inferior grades of coffee, and has entered into contracts with companies in England and elsewhere to further the consumption. São Paulo has some six hundred million coffee plants, representing four francs or $3\frac{1}{2}$d. per plant. Each 50 kilos requires some 70 plants. Thus to produce 1,000,000 sacks of 60 kilos each, a capital is necessary of no less that £13,430,000. The total sum invested in the business in this one state must amount to £100,000,000 at the present time. The probability is that São Paulo will follow the example presented in England by the hop growing countries, indeed polyculture has been the care of the agricultural department for some years past, and the tendency is to supplant coffee with more profitable growths. A remarkable fact is presented to the student of economics. In spite of the high prices ruling in the nineties, Brazil was the only country to materially increase its production, rising from five millions sacks in 1880, to $8\frac{3}{4}$ million sacks in 1900, and 12 millions in 1905, whilst the total output of the rest of the world decreased from $4\frac{6}{10}$ millions to $3\frac{9}{10}$ millions, 1905. Prohibitive taxes now rule in São Paulo with regard to the laying out of fresh plantations, this measure undoubtedly has proved very beneficial to those planters farthest from the exporting centres, and it is a curious property of the business, that plantations recede further and further into the interior, being found over 460 miles from the sea, whilst formerly they were mostly situated near the coast.

Sugar and By-Products.

Another important industry which has suffered greatly from a number of causes, is sugar planting.

The sugar cane was introduced into Brazil shortly after the discovery of the country, and cultivation was commenced simultaneously in Pernambuco and São Paulo. It is stated that the soil and climate of Brazil are better adapted to the production of sugar than that of any other country in the world. The planters have (as is the custom of their kind everywhere) taken advantage of the fertility of the soil to such an extent, that, extracting its vital elements without replenishing them, the yield per acre is now only about 20 tons. Instances are not uncommon where the same lands have been under sugar cane for two centuries, and the methods employed in the majority of the mills obtain not more than 6 per cent. out of 15 per cent. of saccharine matter. Owing to the system of milling, and the small yield, the cost of sugar per pound placed on the market, is not less than a 1d. Under such circumstances Brazilian sugar cannot compete with that from Cuba, Demerara, etc., where the cost of labour is less, and the methods in vague so superior. The principal sugar producing states are Pernambuco, Ceará, Parahyba and Rio Grande de Norte. The cane grows well in most parts of the Republic, and a large industry has sprung up in the States of Rio de Janeiro and São Paulo. The quantity of sugar consumed locally in 1902 was about two-thirds of that exported, and a huge quantity of cachaça, or aguardiente, is produced (806,497 gallons in 1904-5), a notable diminuition from the yield in 1901-2. Alcohol for illuminating purposes is increasing in consumption, as is also that of treacle. A mill has been started at Campos to make paper out of the refuse of the cane, and others are likely to follow.

If we take the figures presented by the State of São Paulo, we find that the percentage of sugar as compared with other countries to be as follows:—

	Tons of Cane per hectare (2½ acres).		Proportion of Sugar per cent.	
Egypt with irrigation	38·5	...	11	to 13
Argentina ,,	40	...	11	to 12
Java intense culture	80	...	14	to 15·5
Hawii ,, ,,	82	...	15	to 15·5
Demerara	62	...	—	—
Louisiana	50	...	11	to 13
Cuba	50	...	13	to 15
Queensland	46	...	—	—
São Paulo	50	...	13	to 14·5
Campos (Rio de Janeiro)	50	...	14·5	to 15·5

The above calculation are sufficiently telling, and one can only marvel, and wonder what the result would be after the introduction of up-to-date methods. With sugar cane growing at its portals so to speak, the price of ordinary cubes works out at more than 6d. a lb. in Rio de Janeiro. In the north the cane ripens within 14 or 15 months, and in São Paulo in 18 or 20 months. One must insist here, as everywhere in this work, on the necessity, imperative and increasing, of scientific cultivation in Brazil. It is useless men embarking in enterprises in that country who are not prepared to work on the most approved lines, those who think they can reproduce in Brazil the rule of thumb methods by which they have impoverished their farms in Europe, are prospective enemies to the Republic. On the other hand, bright, brainy farmers and planters, with sufficient capital, can reap rewards such as they never imagined in the old world. Sugar will pay in Brazil, and pay well if all is not taken out of the land and nothing put in, and if the by-products are properly disposed of.

Cotton.

During the American civil war, the cotton industry was at its height in Brazil, and it is only the last two or three years that it is beginning to forge ahead again. In 1904, 165,000 bales were produced. The price in the Rio market in 1907 varied between 13s. and 14s. per 10 kilogrammes (22 lbs.) Exportation duties are highest in Piauhy 12 per cent. ad vatorem. Freight is high. The Leopoldina Railway (south) and Great Western Railway (north) both having a scale which begins at something over £2 per ton for 150 miles. The lesser distances pay more in proportion, up to double, and the lowest rate is for distances exceeding 200 miles (Leopoldina Railway). Both these lines are English. The Natal and Ceará-Mirim Railway charges per kilometre, exceeding 300, 30 reis per ton. The Central Railway (national) charging something less. Ceará is one of the states most adapted to cotton owing to its dryness, and peculiar climate, but the plant thrives in all Brazil. The most up-to-date states as far as local industry is concerned, are Rio de Janeiro and São Paulo. In 1903, there were in Minas some 37 spinning and combing mills (mostly small), in Rio de Janeiro 29, but with an output vastly greater than Minas, and in Sáo Paulo 18. In this state in 1903, there were some 37,000,000 yards of cotton manufactured in calicoes, prints, etc., the largest mill with 10,000 spindles and 600 hands, using up 2,000 tons of cotton. In the vicinity of Rio city there are several very large mills, one at Petropolis (Cascatinha) employing about 1,500 persons all told. The overseers of many of the Brazilian mills are English, or of English extraction. Without a question this is a flourishing business. Dividends are being paid of 20 and

30 per cent., and even 40 per cent. at times, and it may safely be stated that every mill is making a substantial profit.

Cocoa.

The theobroma is native to Brazil, in the regions of the Amazon valley, but to-day it is cultivated as far south as São Paulo; but the coast of south Bahia, and northern Espirito Santo, and Rio de Janeiro is admirably adapted to its growth when the swamps are drained. At a distance of six or more kilometres from the sea it begins to produce well, and thrives until the colder elevated regions are reached, doing best at an average day temperature of some 80 degrees Fahr. The soil most suitable is an alluvium. light and porous. In some parts of Espirito Santo the climate is so favourable to its growth, that it forsakes its usual habitat, and climbs high up into the serras. Here it produces fruit in the second year, instead of the third. Contrary to cotton, cocoa requires a somewhat humid climate. The number of acres under cultivation in Brazil is continually on the increase, and there are immense territories yet available. Shade is necessary for its best development, but the trees should not be planted too closely together, 12 to 24 feet apart allows of some 300 to the acre. The second crop is larger than the first, and the yield increases until maturity at about ten years. The tree continues in full bearing for 20 to 30 years at least. Frequently flowers and fruit are seen on the trees at the same time. One variety in Bahia is a veritable giant in relation to its fellows, reaching nearly 35 feet in height, and with a trunk 9 inches in diameter. Frequently two crops are gathered in the year in Brazil, each fruit being cut from the stalk without injury to

either. About two lbs. of beans are averaged per plant. Each kilogramme fetches 1s. 3d., and one alqueire of 10,000 square braças (equal 8·6075 acres), planted with 4,000 cocoa trees, 15 palmas or about 3·6450 yards apart, at a kilo per plant, produces some £250. Expenses of cocoa planting are not more than 60 per cent. those of coffee. The most encouraging feature in this cultivation is the fact that the supply continues to be less than the demand. In 1907 the consumption was 156,000,000 kilos and the production 148,000,000 or a difference of some 7,600 tons. In 1906 the figures were somewhat less favourable, and in 1905 the balance was on the other side.

The best districts commence from the State of Espirito Santo northwards. Probably no other tree so productive as this occupies less area of land, and requires so little labour or attention.

Tobacco.

The cultivation of tobacco in Brazil, dates certainly to pre-discovery of the country, for the first voyagers observed the Indians using the fragrant weed. In 1500 the European conquerors commenced its planting, the first experiences being in Bahia. In the latter part of the eighteenth century a large quantity was exported to the mother country (Portugal), and from thence, until the year 1808, to Italy, Germany, Holland and England. In 1845 seeds were introduced from Maryland, through the Government, in order to improve the local culture. Bahia is to-day the great centre of the trade, and a great deal is manufactured there by the firms of Poock, Dannemann, Stender and others. Some really excellent cigars being now on the market. The City of São Felix a short distance from São Salvador (Bahia), is the principal

manufacturing centre. 1,000 plants produce in this state some 300 lbs. of tobacco. The cultivation requires much labour and care, and it is especially sensible to changes in the temperature or modifications of the seasons. Adopting the system employed in Sumatra, 150,000 square metres (equal 179,400 square yards) requires an outlay of some £1,580. The crop should be 10,000 kilos, worth £2,120. This is the result of one year's working, but of course is considering the plant to be cultivated and dried by really practical men.

The tobacco trade, like a good many more, suffers from the existence of parasites and traders up to all kinds of sharp practices. It is very common to find in Bahia that the plant is adulterated with various materials to add to its weight. In addition, many of the planters strip the leaves in a very careless manner, and send to market a product that is calculated to prejudice, not only their own interests, but those of the industry at large. Prices have been rising of late, owing to the improvements of the last few years in the growing and preparation of the leaf. In 1903 the municipality of Caravellas (south Bahia), instituted four annual premiums of £50, £37, £25 and £12 10s. (at present exchange) to the agriculturists who put in 50,000, 30,000, 20,000 and 10,000 plants of the first class. From 1901 to 1907 the exports of tobacco were 199,645,784 kilos, of snuff 106,281 kilos, of cigars 12,095,936 kilos, and of cigarettes 33,482 kilos.

The smaller planters in Bahia employ all the members of their family in the work, and hire their neighbours by granting them lots on condition of one day's service per week, others working on salary, but as a rule no one being amendable to discipline, or caring for their labour, the cultivation is very desultory. Here, as in other classes of agricultural work, the need of hands is

severely felt. The native Brazilian usually despises such toil, especially for another's benefit. One great evil is the horde of speculators who advance money on the crops, exhorbitant interest is charged, and all too frequently the price paid is fixed at the pleasure of the usurer. Hardly any of the planters are able to deal directly with the exporting houses, and moreover are cheated abominably in the weight of the packages they hand over to the middlemen. The consumption of cigars and cigarettes in Brazil itself is very heavy, and the well-to-do still smoke those from Havana, Turkey, etc.

The tobacco producing states are— Bahia, Minas, São Paulo, Santa Catherina, Goyaz, Pernambuco, Piauhy, Sergipe, Ceará, etc.

CHAPTER XV.

Cereals:
Wheat, Rice, Oats and Barley, Maize.
Beans and Tubers.

Wheat.

In Colonial times wheat was grown in the States of Rio Grande do Sul, Santa Catherina, São Paulo, Minas Geraes, and Rio de Janeiro. The cultivation, however, decreased, and was abandoned in the early part of the nineteenth century. The real cause of this cessation of planting in the south was various diseases, such as rust, carbuncle, and caries. In spite of the want of success hitherto, the Government offered premiums in 1857 to farmers who produced a certain quantity of wheat of their own growing. In the north, on the table lands of Ceará and Parahyba, and in Minas Geraes, various attempts were made with more or less success, but with final result nil. To-day the great English flour mills (the largest in the southern hemisphere) at Rio Janeiro is fed almost entirely with Argentine wheat. It is considered that, with more modern methods, such States as São Paulo, Minas, Goyaz, Paraná, etc., can produce immense quantities of this cereal, and experiments now being made are decidedly encouraging. The quantity *imported* 1902-7 was 1,244,460,259 kilos, valued at over £8,000,000. The flour imported was worth nearly £9,000,000. Of this the Capital of the Republic received

almost seven-twelfths, Santos nearly one-third, and Rio Grande do Sul the bulk of the rest, very little being directly imported by the other states, although, doubtless, a large quantity was re-shipped in national bottoms. The importation of wheat from the United States has fallen to a value of some £10 in 1906, in spite of a preference customs tariff of 20 per cent., in return for the most favoured nation treatment, which Brazil receives as regards her produce.

Rice.

Brazilian farmers are not yet up-to-date in rice cultivation, and the recent arrival of Japanese coolies is presumed to be with the view to adopt more intense methods. As with the coffee, the forests are destroyed and burnt. No selection is made of the seed, and it is either dropped into holes, made with a pointed stick, or scattered by hand, and stamped in with the feet. In the north, planting is carried on between January and April, and preferably after a shower. Usually the rice is left to take its own course after planting. That sown in September generally produces two harvests, the grain of the first being cut away at the top of the stalk. At Iguapé (São Paulo) the cost of planting 2½ acres of land is as follows: Clearing, burning, and planting 50 quarts (litres) of rice, 55 milreis, cost of seed 5 milreis, harvesting 50 milreis, transport to farmhouse 8 milreis, thrashing and winnowing 12 milreis, a total of 130$000, equal to £8 2s. 6d., at fixed exchange of 1/3. The harvest amounts to 2,000 litres, costing 3/3 per 40 litres, thus 65 reis, or about 1d. a litre. Each 100 kilogrammes of rice, in husk, produces 60 kilos of grain, and 30 kilos of bran, when treated by a proper cleaning machine, of which there are some 30 in the State of Rio de Janeiro alone. Excluding wild rice, found along the rivers of

the north, there are some 15 kinds known in Brazil, one of which is native, and is responsible with crossing for other varieties. The most common is a Carolina type, and the place mentioned above (Iguapé) gives its name to a kind grown principally in that district. Importation has fallen off considerably. In 1902 over 100 million kilos reached Rio, mostly from Burmah (50 to 60 days by steamer). In 1907 only 11½ million kilos arrived, and it is safe to say that the next decade will see the entire disappearance of this importation. The State of Rio Janeiro has become one of the most important productive zones, increasing its output tremendously the last three years, under the Presidency of Dr. Nilo Peçanha.

The enemies of rice are numerous, and one of them is the little tico-tico, which answers to our sparrow. When planted near rivers the capivary is an extremely destructive beast. As yet there is no exportation, but being largely a staple diet, the home consumption is very great. In the State of Rio, sowing is performed from August to October, and the harvest is in April, May, and June. Rice is grown in almost all the states, but the principal productive ones are Santa Catherina, Paraná, São Paulo, Minas Geraes, and Rio de Janeiro.

Oats and Barley, etc.

The remarks, with regard to wheat, may be applied with some reservations as regards climate, to the above mentioned cereals, which have every prospect of success in such localities as the central plateaux, extending from Amazonas to Matto Grosso. Very few attempts have been made as yet to cultivate these grains, but results have proved satisfactory wherever experiments have been made, under reasonable conditions.

Maize.

The maize was found growing in Brazil by the first navigators, and was known by the name of abatí or avatí, by the Indians. The savages had discovered also its utility in the manufacture of fermented beverages, as well as flour. The whole of the planting, harvesting, and preparation of its products was performed by the women of the tribe. In Brazil it is considered that the soil, which is unfitted for any other growth, will serve perfectly for maize. It is the practice of planting this graminea anywhere, which is responsible for the production of so many varieties, and incidentally the survival of the unfit. The kind which is most generally known, however, is the common yellow maize, popular not only by reason of its abundant production, but also for its resistence to the disease called *calandra-granaria*.

No less than 19 other kinds are found growing in the different zones, and no proper classification has yet been made, nor any determination of which species is best adapted to this or that climate, beyond the commonly known fact that white maize resists the drought better than any other kind. There is no scientific treatment of this subject of this culture as yet, and the result is, that the yield is entirely out of proportion to the fertility of the soil, and favourableness of the climate. The localities principally favoured by Brazilian farmers are those with a western aspect, avoiding the south and south-east. With the exception of cold clays, or sandy ground, the plant is suited to most soils, especially admixtures of sand and clay, and the red earths derived from diabase (Devonian type). Sloping lands are deprived of their woods, and burnt after the timber is dry (July to September). Furrows are made with hoes, some four feet

apart, and five or six grains are planted together. This work is done either from March to May, or August to October. As soon as the maize attains about four feet in height, the earth is worked up round it with the hoe. Sometimes this is done twice, at three and four feet high. Between the lines of maize it is customary to plant beans, pumpkins, melons, etc. Harvest takes place some three or four months after planting, and the cobs are taken one at a time, and carried in baskets to be spread out and dried. It is rare to find a planter who takes the trouble to manure the land in any way, they prefer to destroy the forests, and plant fresh fields. The cost of planting and harvesting an alqueire of land is reckoned as follows, in virgin forest zones:

Clearing and preparing land	180$000
40 litres of seed	4$000
Planting and hoeing	119$000
Harvesting	48$000
	351$000 = £21 18 9

In second growth lands	£16 11 3
Using modern agricultural implements	8 15 0
	= $8\frac{6}{10}$ acres

An alqueire is so-called, because it is just the area of land required to plant 40 litres of seed, and according to the metrical system, it equals in São Paulo and Paraná 2 hectares and 42 ares, or $4\frac{3}{10}$ acres. In Rio, Minas, Espirito Santo, 4 hectares, 84 ares, or $8\frac{6}{10}$ acres. In Bahia the measure is tarefa, $2\frac{1}{2}$ tarefas equals one hectare, and further north, the quadra-alqueire, or 100 braças square, is the land measure. Maize suffers from rust,

and from various roedors, as the agouti and cavy, and also from the armadillo (tatú), and above everything else, from the all devouring locust and a variety of other enemies.

Pernambuco and Maranhão export large quantities to Pará and Amazonas, and to Peru and Bolivia. The state which produces the largest quantity of maize is São Paulo, and next in order of importance come Minas Geraes and Alagoas, little being cultivated in Rio Grande do Sul, Rio de Janeiro, etc.

Beans.

These legumes form, with rice and dried salted beef, the staple food of the majority of the lower classes in Brazil. The greater part cultivated are of a black colour (phaseolus niger, nanus, etc.)

In a plantation made in September, using 42 litres of seed per hectare, in land previously manured, the result was 1,249 litres of beans. Many kinds of red and yellow beans are grown in addition to the above, and they are subject to the same attacks of rust as the other plants mentioned hitherto. The bean being a very gross feeder, it is necessary to enrich the soil before planting, except in rare cases with the first crop. The harvest is over in four or five months after planting, at which time three seeds are placed in a small hole, at a distance of an inch apart. Very frequently beans are planted together with maize, permitting the former to utilize the stalk of its sturdier neighbour for climbing purposes.

In addition to beans, peas (of a variety whose pod is eaten) and lentils are planted, but on a very small scale, and obtaining high prices in the market. As with maize, beans are grown more in the central and southern states.

TUBERS.

Mandioca.

The credit of the discovery and utilisation of this root is entirely due to the aborigines, who also found out the secret of destroying its venemous properties. In Brazil it may well be asserted that it constitutes a veritable underground storehouse of food. The dish of beans, rice, and fat pork is always thickened by a handful of the coarse flour meal, and it takes the place of bread in many places. Found as far as 30° south, it is peculiarly a tropical and semi-tropical plant. There are three principal varieties, two of which are somewhat bitter, and the third sweet. There are, however, many minor sorts (twenty or thirty). The most prized (called aypim) has a root which weighs about 2 lbs., and is used for a variety of purposes, making many delicious preserves. The bitter sort (brava or venemous) is used only to manufacture flour. This kind sometimes weighs 15 to 20 lbs., and is full grown in 8 or 10 months. Before this root is fit for consumption, it must be pressed well and washed, and the water and residue must be thrown away out of the reach of animals, as it is distinctly poisonous. The largest roots produce some two gallons of prepared meal. Some kinds contains 23 per cent. of starch. It is planted usually in August or September, in any part of the country, from the coast up to 3,000 feet above the sea level. The plant crushed and well washed is pressed into a dry mealy mass, and roasted on hot plates, being continually turned until done. A good hand can prepare two or more sacks per day.

The finest qualities are worth from 12/6 to 15/- a sack, and the coarser, up to 7/6. One disadvantage is that the roasting must be done the same day as the plant is washed and crushed, otherwise it will turn sour. The

water, which has escaped from the mass in pressing, contains a large quantity of very fine starch, and the deposit is washed several times, and strained off. Tapioca is a product of the residue.

Arrowroot (Araruta).

This plant is native to Brazil, and gets its name from the fact that the Indians used it to cure the wounds made by poisoned arrows. To grow to the best advantage, the root demands a porous, well drained, alluvial soil. Planting is done by means of small slips, and as soon as the new growth makes its appearance, it is earthed up in a similar way to celery. Planted in March, it comes to maturity in from 8 to 11 months. The smallest fragments of root will soon strike, and throw out leaves. The root must be well washed to get rid of its impurities, it is then crushed, or ground, and mixed with plenty of clean water, and passed through a bolting-cloth or sieve to separate the fibrous parts from the powder. The latter is dried in the sun, on perforated tables, and is ready for packing in four days. The price, locally, ranges from 6d. to 1/- a lb. The production is not nearly sufficient for home consumption. The state which is best adapted to the cultivation of this plant is Espirito Santo.

Mangarito (Caledium sagéttofolium).

A plant of the family of araceas, little grown, but more nutritive, and easier to prepare and pleasanter to the palate than any of the other tubers.

Potatoes.

The sweet potato is the most common in Brazil, the English potato, as it is called, being largely imported. Such as are grown in Brazil at present, usually represent the kind which is given to pigs in Ireland. The anomaly

is seen in the maritime cities of the Republic, of large consignments of the tuber from England, and latterly from New Zealand, although those grown in Bolivia and Peru, at an altitude of 9,000 to 12,000 feet, are considered far superior to ours. In spite of the fact that the high lands, within a few hours of Rio de Janeiro, are admirably adapted to the cultivation of what is termed the English sort, and that two crops may be gathered annually, the cultivation is very small, and no pains are taken to select the right sort of soil. Planted in March the tubers are fit to be pulled up in June, and sown again in August the harvest is ready in November. The yield of the sweet potato is, however, vastly superior, being 20 times the amount sowed. The latter thrives in a different location, preferring the lowlands, and depressions between the hills. Some of the kinds are ripe in three or four months, and they frequently take a disagreeable taste if grown in manured lands. The red variety is most esteemed, and is the most suitable for the table, the white serving better for animals. To fatten pigs, the country custom, is to let them loose in a sweet potato patch, thus saving the troube of digging the land, and at the same time enriching it. The sweet potato is considered more nutritive than the European, as it contains more sugar.

Yam.

The Brazilian valleys are covered with this plant, which is considered as a *dernier ressort*, when all other cultures fail. At ordinary times it serves the same purpose as the commoner kinds of sweet potato. In virgin and fertile soil it develops fully in from six to twelve months, the roots weighing from 15 to 22 lbs. Boiled, it is an excellent food for pigs, fattening them extraordinarily.

CHAPTER XVI.

Tropical Fruits.

Brazil possesses climates suitable for the growth of every kind of fruit known.

In what corresponds to the European winter in the southern states, all fruit bearing plants common to the northern parts of the world, flourish and give abundantly of their substance. Amongst the better known belonging to the tropical zone is the abacati, produced from California to Rio Grande do Sul. The part eaten is the inner pulp, surrounding the central mass of seeds. The fruit varies from the size of a pear to that of a very large lemon. In Mexico a delicious salad is prepared from this pulp. Eaten alone, it requires sugar or lemon juice or both, as it has no acid or sub-acid flavour. It is planted by seed, hardly buried in the earth, but success has been obtained by experiments with shoots and seedlings. Fruiting only in the fourth or fifth year it becomes ripe after January. No diseases are known, and it is a very profitable growth, being worth from 6d. per fruit up to 1s. 6d. in the European markets.

Pineapple.

The abacaxi is the Brazilian name for the finest quality of pineapple (ananaz). It is planted by shoots, after September in the south, and from March to May in the north. It comes into flower in the spring (August to September) and ripens by January. Sometimes fine fruits are sold in Rio de Janeiro as low as 1½d. each (retail). Pernambuco is a great seat of the trade,

mounds being piled up in the covered market, and at a hundred stores. The price asked to passengers in transit is usually 3d. to 6d., according to size. In 1907, 270,572 kilos were exported, of a value of about £5,000.

Abieiro (Lucenna-Cainito).

A plant only found in the more tropical states, and never below Santos. The fruit is oval, of a clear yellow, and has two to four seeds; only recently placed on the market at Rio de Janeiro.

Pará Apricot.

The tree grows to 30 feet high and over, and bears a spherical fruit the size of a large orange. It has one large seed only. Eaten raw or used in all kinds of tarts, etc. It has been reproduced hitherto by seed only, but it is considered that slips or cuttings would produce a fruit of much better quality.

Araça.

Araça, a plant belonging to the myrtaceas, the fruit of which is used principally for making a kind of preserve.

Banana.

Grows from Amazonas to Rio Grande do Sul, but is hardly found above 3,000 feet in the southern and central states. There are many kinds cultivated, and we may enumerate pacora (in Pará) a very large kind, usually eaten fried or boiled. The outside is red. Musa cavendishii (anã), has a short trunk, dark leaves, and produces huge bunches of fruit of a long, curved and cylindrical form, light yellow coloured. Musa sapientum —trees high and rounded fruit. Exportation of bananas in 1907, 1,878,904 bunches, worth £6,000. Each bunch weighs on an average 45 lbs., and the heaviest attain 125 lbs., or up to 300 bananas. Freights from the planta-

tions in São Paulo (near Santos) to Buenos Aires (Argentina) total about 12s. 6d. per dozen bunches. In Santos there are some 200 planters who only cultivate one class (the anã), most of them occupying the lands without any right of ownership, as they are the property of the state, and have never been considered worth selling. Each kilo of bananas exported pays 1 real of duty, equalling 1½d. per 100 kilos.

In Cubatão (near Santos) one planter has 500 alqueires under bananas, and the whole of the district is devoted to this culture. The whole of the banana traffic is limited to the coast line from Rio de Janeiro southwards. Pará and Pernambuco are so well situated, however, with regard to exportation to Europe, that doubtless when their port works are completed, they will prove the shipping centres of an immense trade. A plantation of 500 trees properly treated yield 10 dozen bunches a month, and a grove of the second year only, will produce 15 dozen bunches per 1,000 trees. Some plantations more than 30 years old are still producing, the only attention given being the clearance of extraneous matter from the vicinity of the plants, and the bunches average 70 bananas, even after such an extension of time. There are reckoned to be 2,000,000 trees within the district above mentioned. Labourers employed in cutting the bunches (still green) are paid at the rate of 4s. 6d. to 5s. daily.

Caju (Cashew).

There are several kinds of this tree, of the family of terebinthaceas, and all are indigenous to Brazil from north to south. It is found everywhere, high up on the table lands or down in the forests or near the sea shore. In the Brazilian cities the fruit is used to make a very

refreshing drink (cajuada) or prepared as a preserve, similar in form to ginger. It is exceedingly agreeable in this latter manner, but the packing leaves much to be desired. The syrup makes a delicious wine, and the curiously formed nut (outside the fruit) is the portion which is well known in Europe. Curiously enough, this plant disdains fertile and rich soil, prospering in an arid waste. The fruits are ripe in November. One type of tree (found only in the woods) attains 50 feet, but the fruit is very small.

Many kinds of cacti produce agreeable fruit in the warmer parts of the country. One of the best known is the Barbary fig, introduced from Mexico. It is more procured, however, for the purpose of cochineal, than for anything else, the fruit being insipid and somewhat acid. Another, the cereus triangularis, bears a fruit equal in size to an orange. There is no exportation of these products, and they are little considered locally.

Cidreira (citrus medica), the largest of the citrus family, the tree being small, and its branches borne down to the ground by the weight of the great fruits, some of which are a foot or more long. It is cultivated largely for the purpose of making preserves, and requires a fertile soil, and is reproduced from either slips, seeds or by grafting. In spite of its not being native to Brazil it is perfectly acclimatised, being found in all parts of the country, and in all sorts of climate, doing equally well to all appearance everywhere.

Bread-fruit.

This tree is from 20 to 35 feet in height, and demands moist heat for its most perfect development. The colour of the leaves and fruit is of a light green, and the latter is usually of the size of a large orange. The part eaten

is the central pulp, either roasted or boiled. Brazil possesses varieties entirely without seeds. The tree is only found along the coast line, being entirely unknown in the higher lands of the interior. It flowers and bears fruit nearly the whole year round.

Fructa de Conde (Anona squamosa).

The fruit is about the size of an apple, with a very rough scaly exterior. The interior is composed of a delicious soft mass, eaten with a spoon. The plant is reproduced from seeds, slips, etc., and requires a dry fertile soil. Like the bread-fruit tree, it is only found in warm places. It is very much esteemed in Brazil.

Cherimolia (Anona cherimolia).

Derived from Peru, the plant is relatively small (6 to 13 feet high). The fruit, equal to an orange in size, is scaly outside, and formed of a number of sections. The colour when ripe is of a dirty yellow. Sweet to the taste, it has a very agreeable perfume, and is considered the finest fruit of the anonaceas. It is known in Brazil by the name of condessa (countess), to distinguish it from the foregoing, conde (count).

Sour Sop (O. Carossol).

Brought originally from the West Indies. The fruit is equal in size to the citron. It is not esteemed much in Brazil, and requires a very hot climate to grow to advantage.

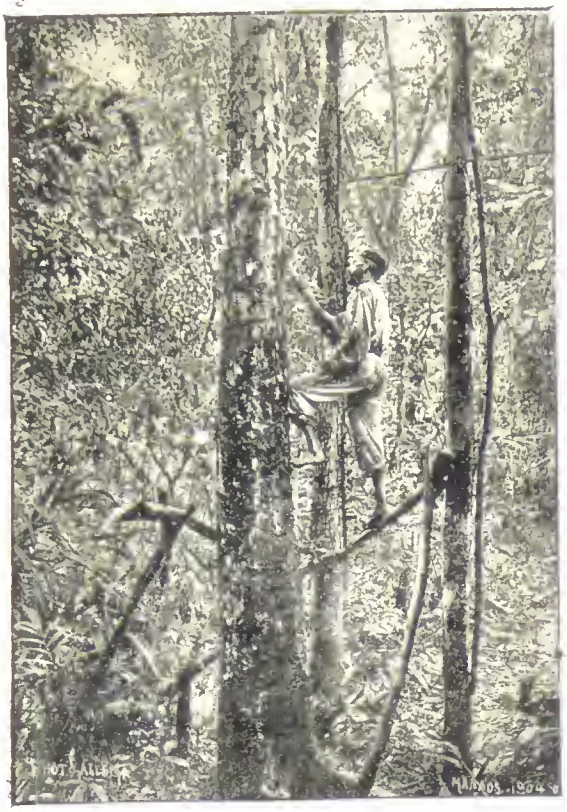
Guava (Goiabeira).

Previously exclusive to tropical Brazil, it has spread all over the country, and is one of the plants most commercially exploited. In the vicinity of Campos (State of Rio de Janeiro) it grows in profusion in the woods, and at least 20 per cent. of the preserves manufactured in

Brazil are derived from this fruit. The locality named produces some 600 tons annually of jelly, consuming in the factories 120 tons of the fruit. The average price, 1905-1906, was 9d. per 32 lbs. There are two crops yearly, January to March, and September to November. The preserve (named goiabada) is frequently badly made, but one or two marks are excellently turned out. In 1905 some 4,517 packages were sent from Campos district to Rio de Janeiro. Each packet represents 4·110 days wages, and the total cost per package placed on the market works out at £5. Each tin (about a pound) is sold at from 1s. upwards. Attempts at exportation to Monte Video and Buenos Aires have not proved remunerative up to the present, in spite of the freights being less to the River Plate from Rio de Janeiro (1,200 miles) than from Campos to Rio, a distance of not more than one-seventh part at most. The exact rates are, per 100 kilos (roughly 2 cwt.), Campos to Rio 5s. 7½d.; Rio to River Plate 4s. 10½d.

Jaboticabeira (Eugenia Cauliflora).

The handsome tree which produces the jaboticaba grows abundantly in the forests of Minas, Goyaz, São Paulo and Matto Grosso, and is frequently found near the coast. The trunk is extremely smooth, and reaches a height of 30 to 40 feet at times, with an abundance of foliage. The flowers grow, not on the branches, but on the trunk itself, from the ground to the top of the tree. The fruit is about the size of a plum, but rounded, and contains delicious white pulp and one large seed. The skin contains a large amount of tannin, and much colouring matter. This fruit makes a fine wine, and may be eaten as dessert, or used as a preserve. The tree takes six to eight years to come to maturity sufficient to pro-



Tapping the Rubber, Amazonas.

Smoking the Rubber. Amazonas.

Transporting Maté to the Factory, Paraná.

duce crops, but has an exceedingly long life, and continues to bear till an advanced age. No attempts at improvement of the stock have been made, although it is considered that the fruit would be greatly increased by propagation through slips or grafting. Exportation of this fruit is very difficult, owing to the softness of the interior rendering it liable to smash.

Jambeiro (Eugenia Jambas).

This myrtacea is found on the sea level, and high up on the table lands, and bears fruit at almost any altitude. The tree is small, hardly ever exceeding 20 feet. The flowers are beautiful, and are succeeded by fine fruits, the size of a plum, and of a rose colour. The perfume emitted by this plant is very sweet, reminding one of the queen of flowers itself, and thus it obtain its name of jambo-rosa. It is produced from seed, and the kernel is loose. The above is the most highly prized variety of the jambos, but there are several others grown, some of which are more ornamental than useful.

The Orange, Lime and Lemon.

The bitter orange is common in many parts of Brazil, and from it is supposed to be derived all the other varieties. Grafted, it produces the finest kinds of the sweet orange. The fruit of the first has a loose rind, and it is somewhat flattened at top and bottom. The outside rind is frequently of a much darker colour than that of its sweet relative. The leaves are used as an infusion for various purposes, and frequently take the place of tea. The rind is used for making preserves. The citrus aurantium is the better known, and the king of them all is the kind grown in Bahia, and called navel oranges in England. This is the famous orange that has rendered the California groves noteworthy, although in its Pacific

domicile the fruit has deteriorated. In 1907, the exportation of oranges of the above type was some half a million, worth £2,000, a mere bagatelle when one considers the possibilities of this trade, and the annual consumption of England alone, amounting in 1904 to £2,500,000 for oranges and lemons. The mandarin or tangerine orange, brought from China, is much grown in Brazil, but the fruit is almost twice the size of that seen in the London market. In 1907, 63⅕ tons were exported, worth £1,150.

The lime is grown in most of the states, and in favourable situations attains a large size. I have eaten some that were as large as the navel oranges, and were most delicious.

The Brazilian lemon is usually quite small, but very juicy when in perfection. Its rind is thick and of a beautiful dark green colour when it is usually plucked for maket. There are two other kinds of lemons besides the citrus of commerce, one growing in a state of nature in the woods. The other is called the sweet lemon, and is obtained by grafting. Neither oranges, limes or lemons are at all cheap in the more populous cities, if one considers the abundance produced. Like the quince in the Republic of Uruguay, the fruit is often left on the trees to spoil.

Mamoeiro (Mamona).

The mamoeiro is a plant of 10 to 20 feet in height, with a straight trunk. The fruit is large, oval, somewhat pointed, and of a dark yellow colour when ripe. It is much esteemed in Rio de Janeiro. In Pará it attains an immense size, weighing from 4 to 8½ lbs. This plant cannot exist where frosts occur in the winter.

Mango. Grows luxuriantly in all the hotter parts of Brazil, especially in Bahia and Pernambuco.

Mangostão. Better suited to the West Indies than to Brazil. It is stated that the State of Pará is the only one where this famous fruit can be grown.

Maracujá. Principally used for the purpose of making refreshing drinks. It belongs to the passifloras, and is distinctly a tropical fruit.

Sapoti. The fruit is of an earthy colour, oval shaped and rather sweet.

Pitangueira. There are several of these belonging to the myrtaceas, all bearing fruits of purple and yellow hues. They are common to Brazil.

Toranjeira (citrus decumana). Used for the manufacture of preserves. Of less importance than it deserves, and has had no attention paid to it.

The above represent a few of the numerous fruits which have so many forms, colours and tastes. Most of the purely Brazilian ones, it is safe to say, are entirely unknown in England, and it is very difficult to persuade a farmer to make any attempt to grow on a large scale, much less get him to run the risk of sending a consignment to Europe at his own cost. His system of business is exceedingly simple, i.e., to sell on the spot for cash, and chance losing half the profit. Again, apart from such staples as oranges, guavas, bananas and pineapples, there are hardly any merchants or exporters who trouble themselves about fruit. If they do, it is to supply the markets of Monte Video, Buenos Aires, Rosario and perhaps Chili.

Acclimatised Fruits.

The European and Japanese plums have both been tried in Brazil, and the latter adapts itself perfectly. Of the varieties cultivated, and which produce magnificent crops, we may cite—

Abundance (Douglas Babcock), burbank, and yellow Japanese plums.

Damson. Like the oriental plum, this fruit does well in Minas, São Paulo, Paraná, etc.

Mulberry. Acclimatised perfectly, withstanding both heat and cold. Not cultivated for the fruit, but for feeding silkworms.

Cherry (bigarreau), etc. Experimented with recently in the southern states.

Fig. Universal and highly successful.

Raspberry. Does very well in the south.

Apple. Produced to *perfection* in selected soils in the more temperate parts of Brazil.

Quince. Yields splendid crops. Is principally used for the manufacture of jelly. A large quantity of the preserve comes to Rio de Janeiro from the small towns, high up in the Organ and Estrella Ranges in the same state. Theresopolis, for example. No proper attention is given to the cultivation of this fruit.

Strawberry. Fruits perfectly from Rio de Janeiro south, but is quite inferior at present to the berry we know and appreciate so well in England.

Nespereira (photinia japonica). This tree is improperly termed the yellow plum in Brazil. An old fashioned fruit, and rarely seen at home now, the medlar is extremely common (or the Japanese variety is) in the south, but usually does not bear very well owing to want of proper cultivation.

Peach. Of the fruits introduced from abroad, the peach has made itself more at home than any. Most of the European varieties are grown with some success, but the oriental fruit is not yet seen, except in the catalogue of a professional grower of Pelotas (Rio Grande So Sul).

Pear. Not very well adapted to Brazil, unless it is the sand or Chinese pear.

Gooseberries and currants are, I believe, quite unknown as yet in the country.

Viticulture.

Grapes have been known in Brazil since early colonial days, and the kind mostly grown are white muscatel, lady's finger and ferrar. Amongst others introduced more recently, the uva americana or isabella dates back some 50 years.

In the States of Rio, S. Paulo, Paraná, etc., from October to April, the vine suffers from diseases engendered by the humidity, such as fungi. In spite of this, here are found the finest sorts. An expert grape cultivator (Dr. Fialho) near Petropolis has some hundreds of varieties growing, and exhibits the most magnificent bunches in the capital (3½ hours by rail and water). Even in the City of Belem (Pará) a vine exists which produces three crops annually, this is under adverse conditions, as it rains daily in that place.

In the valley of the River São Francisco the climate is best adapted to grape culture, and particulars are given in a Government report by Dr. João Silveira in 1906, of the results obtained from 175 acres of alluvium. To a depth of nearly 20 feet the soil is composed of sand, mixed with clay and black earth, without stones or foreign matter of any kind. The low lands of this area are flooded from December to January for a distance of 1,300 yards. The climate is dry with not more than 12 or 14 heavy rains in the year (October to May). The highest summer temperature is about 100 F., but the nights are always agreeable. In the winter the highest point reached by the mercury is 85° to 90° F., and the

lowest 45° to 50° F. Irrigation is carried out throughout the dry season. The area is divided into two parts. The first has 640 vines remaining from 1,000 originally planted, and there are 150 varieties from the four continents. The most delicate and finest European sorts give three harvests annually, with a supply of 70 to 80 quarts of water daily, and the ground is well manured. The quantity of grapes produced under such conditions is enormous. In the city (Joazeiro) one vine of three years of age had 542 bunches. At the trial grounds, white muscatels have weighed over 4 lbs. the bunch.

This experience has proved one of the most successful, and has encouraged the Department of Agriculture (Bahia) to further outlay. From this trial ground, slips have been distributed all over the country (more than 34,000). The Agronomical Institute of Campinas (São Paulo) has also sent out some 30 to 40,000 per year. The state most occupied with the vine for wine making is Rio Grande do Sul. Between 27° and 34° south the climate is entirely suited to the vine, and corresponds with southern Italy, except as far as the topography is concerned. In this Brazilian state, the vine is not attacked by its terrible enemy, phyloxera. Already native wines have received high recognition (Milan exhibition) in spite of the competition of European growers with long experience and great reputation. Most of the vineyards belong to Italian colonists, and the harvests are usually exceedingly good. The following are typical results:—1. 2½ acres equal 7½ tons of grapes. 2. 2½ acres equal 17½ tons of grapes. 3. (Caxias) 18 tons per hectare (2½ acres), and Guaporé and Bento Gonçalves 25 tons per 2½ acres, average 11,480 litres of wine. In Portugal the average yield is 1,870 litres; France 3,300 litres and Chili 5,000 litres. In Nova Trento a vine exists 17 years

old, from which has been taken 1½ tons of grapes, producing 792 litres of wine.

In Rio Grande grapes sometimes sell at 1½d. per 11 lbs., and the wine is worth the same price for one-third dozen bottles, retailing in Rio de Janeiro for 7½d. to 1s. a bottle perhaps. In 1902, the entire export was 288,000 litres, and in 1906, it rose to to 2,700,000 litres. It is stated that the production, including local consumption totalled 10,000,000 litres the same year. The average percentage of alcohol in these national wines is 7 to 13. The proportion of acid 0·866 to 0·1050. Those of France are 0·28 per cent. to 39 per cent. The above figures relate only to wine made from the grape. As already mentioned, the pineapple, jaboticaba, cashew and other fruits are extensively used for the purpose of making wines.

BEE CULTURE.

The honey bee, as known to Europe, is not native to any part of America. There are, however, some honey producing bees, common to Brazil, and in particular one stingless variety. The only apiculture practised in Brazil is with the bees introduced from Europe. Most of the states produce a good quantity of honey, especially Rio de Janeiro. The largest colony is at Campos, and consists of some 160 primitive hives composed of wooden boxes measuring 24 by 12 inches, by 16 inches high. The bees are of Italian origin, and are derived from some imported in 1904. The honey is of excellent quality. In 1905, the exportation of this state was some 34¾ tons. This culture is also carried on on a small scale in many parts of São Paulo, and planters of vanilla are advised to keep bees in order to artificially fertilise the female

flowers. São Paulo produced in 1903 some 31 tons of honey, worth £1,400, and 22½ tons of wax, valued at £2,400. The average price per kilogramme being—honey 9d., and wax 2s. 6d. Prices in Minas Geraes are somewhat higher, owing to limited output. Using the most modern apparatus, in Paraná, each hive yields 25 to 30 kilogrammes of honey, and from 1 to two kilogrammes of wax per annum. In Rio Grande do Sul in 1905, 69 tons of honey were produced, worth nearly £7,000. The amount of wax totalled 41 tons. Most of the honey sold is in a semi-liquid form and is retailed in bottles and very frequently has an exceedingly suspicious colour, as if treacle had been mixed with it. The principal use of the wax is for church candles, and the amount exported to Europe bears no comparison to that consumed in the country. Most of these products go to Germany, and the figures for 1907 are—

Honey	7,124 kilogrammes	value	6,357$000 paper
Wax	148,818 ,,	,,	272,451$000 ,,

SERICULTURE.

In spite of the climate of most parts of Brazil being remarkably suitable to the silkworm, the above industry is as yet in its infancy. As we have already seen, the mulberry thrives splendidly, and neither it nor the silkworm suffer in any degree worth noting from the diseases so common in Europe. One of the principal reasons for the non-development of sericulture, has been the great cost of mounting factories capable of dealing with the raw silk. In Petropolis, however, there are two mills, one Italian and the other German. The climate of this delightful little city (justly termed for its beauty A Reina do Brasil) is so well suited to the growth of the

mulberry tree, that cocoons produced locally prove superior to many foreign ones, not only in brilliant colour, but also in elasticity of thread. The two Petropolis mills consume 45 tons annually between them, but most of the thread is imported. In Nova-Trento (Santa Catherina) the whole municipality is inhabited by colonists from Trent, in Austrian Italy, and most of the inhabitants are engaged in silkworm culture, the proceeds being used by two small factories belonging to a religious order (Brazilian), where the nuns themselves are the actual work-people. The first factory was started in 1900, and the products obtained three gold medals at the St. Louis exhibition. The annual output is now 3,000 yards of silk, 216 scarves, and over 100 pairs of stockings. The other factory is somewhat smaller, the production amounting to about £1,800 in value last year. Besides the above, there are many hand looms scattered throughout the country. In Rio Grande do Sul the industry is further developed, two large and various small factories being established, and in Minas Geraes, Barbacena is the seat of this culture, already well advanced. The colony of Rodrigo Silva, in the above municipality, produced 2,460 kilos of cocoons in 1905, and distributed no less than 38,600 mulberry slips. The cocoons are generally collected from August to September, September, October, and November to December. 30 grammes of eggs produce an average of 36,000 caterpillars, which consume 800 to 850 kilogrammes of fresh mulberry leaves to produce from 50 to 70 kilos of cocoons, the silk being of excellent quality, but somewhat coarse in thread. Barbacena is, it is worthy of note, some 3,400 feet above sea level, and slight frosts are not at all uncommon in the winter. Many other districts in this state are taking up silkworm culture with success. In São Paulo a factory

has been started, and the silk produced took the first prize at St. Louis, three medals at Rome, and one at Milan, besides others at Campinas and São Paulo city. The following figures illustrate the profits to be obtained from this industry in Brazil, even under present conditions.

EXPENSES.

30 grammes of eggs	9$500
Mulberry leaves	20$000
Labour, etc	65$000

Result, say 60 kilos of cocoons, worth 240$000.
16 milreis equals £1.

Profit 145$500. This is the result of 30 days' work only, utilizing the services of women and children. From these figures one may easily calculate the profit to be obtained from an outlay of, say £1,000. It must be remembered that the duty on imported manufactured material is enormous. Notes just to hand from Minas Geraes inform me that the Government of this state has decided to open the following credit for three prizes: (1) 10 contos of reis (£625) being 1/3 per kilo to those producing 10,000 kilogrammes of cocoons. (2) £312 10s. to the planter with at least 2,000 mulberry trees properly cultivated; and (3) 45 contos of reis, equals £2,722 10s., to the two first factories possessing modern machinery, employed in the weaving of silk, produced from national cocoons. Enough has been said to show the prospects open to any intelligent capitalist in Brazil.

CHAPTER XVII.

The Pastoral Industry.

With regard to pastoral conditions, Brazil must be divided into three zones, i.e., tropical, semi-tropical, and temperate. The first is naturally the north; the second the central territory; and the third, the whole of the south. Before dealing with the stock it will be necessary for the benefit of practical farmers to consider the grasses.

Root grass. Not exceeding 10 to 12 inches in height, always green, and springing up as if by enchantment, after being cropped quite close by thousands of beasts. The local cowboys say that it contains sufficient salt, impelling the cattle to drink. The grass is found from Goyaz to the Araguaza and Tocantins.

Capim branco (white grass), considered to be andropogon glausens. There are two or three kinds of this graminea, and they are found in patches amongst the first named grass, but are not so resistent.

Mimoso. Grows along the central part of the São Franciso River.

Marmelade grass. A giant reaching 16 to 17 feet high, peculiar to the lower parts of the Araguaya

Rice grass. On the margin of the rivers generally.

Beach grass (panicum fistolarum). The principal green food of stock in Matto Grosso.

Capim gordura (tristegis glutinosa). The commonest in Brazil, growing wild everywhere.

M. L. Glaziou collected, in a short time, no less than 155 *new* varieties of gramineas on the central

plateaux of Brazil. It is impossible to enumerate the names of a tenth part of the plants suitable for forage, and, if it were, undoubtedly their names would be entirely unknown to the general reader. Suffice it to say that there is no lack anywhere, neither of food nor water, and the latter is abounding, and as pure as virgin snow.

Stock.

In Rio Grande do Sul there are reckoned to be, at the time of writing, 4,300,000 oxen, besides 2,000,000 just over the boundary line in Uruguay, but belonging to Rio Grande stock raisers. Calculating the population of Brazil as 20,000,000, the consumption, per annum, should be about 12,000,000 bovines, and in live stock in all, some 30,000,000. In Rio de Janeiro the average amount of beef eaten, per inhabitant, is 22 kilos. In the State of Minas there are more than 100 butter and cheese factories, producing merchandise to the value of 6,000 contos, equal to £370,000. The exportation of butter from Santa Catherina, in 1907, was 667$\frac{2}{3}$ tons. The Brazilian oxen, derived from the primitive and isolated herds, probably natural to the country, are quite small, weighing on an average not more than 400 lbs. when dressed. These animals are noteworthy for their immense horns, one preserved having a capacity of five or six quarts. In Goyaz, and adjoining states, a variety of cows called mocha, is much esteemed, and is considered, locally, equal or superior to any of the imported stock. The zebú has been introduced with great success, and in the north the Malabar is found widely spread. Recently Durham, Jersey, and Herefords have been brought over, as well as various specimens of the simmonthal (a Swiss type). Apart from Rio Grande do Sul, the Brazilian states employ the most primitive methods of stock raising, the

herdsmen limiting themselves to visiting the pastures now and then, and somewhat more frequently at breeding time, when the calves are immediately separated from the cows, and shut up in corrals, where they are allowed to feed twice daily, morning and evening, when the cows return voluntarily to the enclosures. The cowboys of the great plains of Goyaz, Matto Grosso, and other central states, are dressed entirely in leather from head to feet. They are usually paid by a fourth or fifth part of the production. Each stock-raising district of Brazil has its own dress and customs, and technical language.

In the north the oxen are either seized by the tail or lassoed. In Rio Grande the cowboys use the bolas. In the same state the Argentine-Uruguayan term of estancia is employed, instead of the Portuguese word fazenda, used in the other parts of Brazil. The animals are usually marked by cutting their ears in a distinctive form. Where it is necessary to give salt this is done in January, May, and September, in the proportion of one sack to 70 oxen. The drover, who is accustomed to complain of travelling 10 or 15 miles, with a few beasts over good roads in England, would, doubtless, open his mouth at the thought of a hard journey, varying from 450 to 600 or more miles, with hundreds of wild oxen, many of them laden with stores. From Matto Grosso to the south of Minas Geraes is 1,050 miles, and the whole of this distance is annually travelled by many indefatigable horsemen. Of the most noteworthy drovers in the cattle zone is a priest, and the good father shuts up his church regularly at the proper season, to go to market with a goodly number of long-horned quadrupeds. A case of a shepherd who pays more attention to oxen than to sheep. It may not be irreverent to mention here another reverend (an Italian) who was glad to sell matches in the

Rio streets for a living, and who declared it was better than preaching, from a financial point of view. It is not only the vast distances traversed that render the drover's life an onerous one. Sometimes at dead of night the cry of a panther in the woods will suffice to stampede a thousand head. The noise *en route* of the clashing horns of the beasts can be heard for leagues, and resembles a distant clap of thunder. As the only time possible to drive the stock is the rainy season, the camping grounds become quagmires, with the animals breast deep in mud. The average number of oxen in a drove is from one to two thousand, and this frequently represents the whole capital and credit of the drover.

Sometimes the owner loses the whole herd before reaching his destination. The animals are emaciated living skeletons, on arriving at the resting and fattening place, where they remain 8 to 12 months. From Barreto (Minas) they are sent to São Paulo on foot, or by water if destined for the Federal Capital (Rio Janeiro). In Matto Grosso an animal two years old is worth from £1 to £2, four years old, £2 10s. to £3. For a saddle or draught ox, from £3 to £5 10s. In Goyaz an ox, more than five years old, is valued at £2 to £6 5s., according to the number of heads available. In Piauhy the top price is £1 5s. The cost of a journey of some two or three months is about £1 per head. The most important cattle fairs are, Tres Coraçoes (Rio Verde), Bemfica, near Juiz de Fóra (Minas), Sitio (Minas). The whole of the stock sold at these fairs is destined for the municipal slaughter-house of Rio de Janeiro, at Santa Cruz, where, in spite of the immense population it has to supply, not more than 400 beasts are killed daily. The reason of this is the entire want of cold storage. In Rio Grande do Sul there are 21 factories for the preparation of

xarque (charque) or penmican, or jerked beef, known in Brazilian shops as carne secca (dried beef). Brazil consumes 80 per cent. of the world's production of this meat. Fortunately the importation is decreasing, and no doubt the consumption of this frequently unpalatable article will be gradually reduced to a very low amount. Each ox gives 75 kilos of meat, worth 380 reis a kilo, 25 to 30 kilos of hide, at 660 reis a kilo, 22 kilos of fat at 300 reis. 40 quarts of salt are used in the preparation of each lot of flesh. In Matto Grosso there is a large extract of meat factory, owned by a Belgian company, and 60,000 oxen are slaughtered annually. In Rio Grande there are also several small preserved meat factories, and one large cannery, which is also the most important biscuit factory in Brazil (Leal Santos and Co.), in Rio Grande.

Horses.

The principal credit for scientific study of the pastoral industry belongs certainly to the State of São Paulo. This state has now taken in hand the improvement of the national race of horses (which is undoubtedly Arab, or a degenerated variety of this famous breed). In some parts there are Russians and Anglo-Normans, some worth £62 10s., when broken in. In Minas there exists a good stock, derived from Arab stallions and national mares. In the northern pastoral zones there is a race of horses capable of covering 60 miles daily. The Brazilian horses are not, as a rule, large, but they are very wiry. By the initiative of the present Minister of War, the Brazilian cavalry is being remounted with national equines, the regulation demanding 1 metre, 48 centimetres in height (about 14½ hands), and no difficulty is experienced in getting animals over this size.

Mules and Asses.

The bulk of the carrying trade in Brazil rests on the backs of the former of those two useful animals, and no others have been so despised and ill-cared for. They are distorted in the legs, and this is attributed by the breeders, to the insufficiency of lime in the pastures. The only states that have devoted any attention to the raising of this kind of stock are Grande do Sul, Paraná, São Paulo, Minas Geraes, Goyaz, and Bahia, the penultimate state exporting mules to Bolivia. The greater proportion of the animals in use in the Republic, are, however, imported from the Argentine Republic. Whatever progress has been made in recent years is principally due, not to the breeders themselves, but to the efforts made by the Governments of such up-to-date states as São Paulo, Paraná, Minas Geraes, etc.

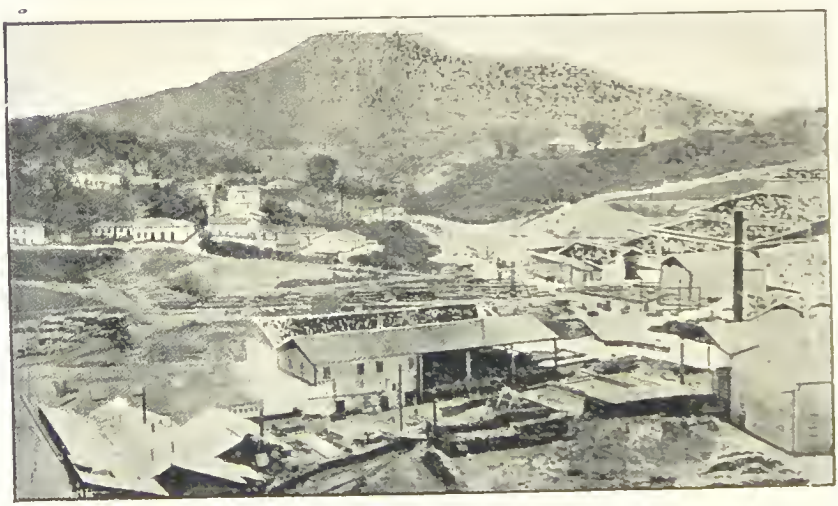
Sheep.

We must turn again to the Paulistas, if we wish to see what has been accomplished in the way of sheep breeding. Amongst these enlightened farmers one may come across splendid specimens of the Oxford, Southdown, Hampshire, and Rambouillet sheep. In Rio Grande the Southdown, known locally as black face (cara negra) is preferred, and the wool produced is abundant and fine. Not only the south, but as an illustrious Brazilian, Dr. Assis Brasil, says, the plateau of Paraná, Santa Catherina, and Rio Grande, with an average of 2,000 feet elevation, is well suited to the sheep, more, perhaps, than even Argentina or Australia. How much more, then, central Brazil, with 3,300 to 4,000 feet of altitude, and the most delicious climate in the world. In Goyaz experiments have proved that the sheep is entirely adapted to this zone.

A Maté deposit, Paraná.

A Coffee Plantation, São Paulo.

The Docks, Santos — Loading Coffee.
(Each bag weighs about 130 lbs.)



Morro Velho Gold Mine, Minas Geraes.

Goats.

Here we find the beast who (as in Europe) will get a living where any other will starve. Where the Cearense has to emigrate, sometimes owing to the drought, his goat finds ample subsistence, and this state (Ceará) exported in 1906 more than 400 tons of skins, worth 1,500 contos of reis. In Piauhy a splendid milch goat is found, of a remarkable size, and all over the northern hills, from Maranhão to Bahia, hardly a family exists without possessing a herd. The cost of their keep is less than that of any other kind of stock, and the pecuniary results are almost immediate. One may say that this animal is found everywhere in Brazil, especially where others cannot be profitably raised, amongst a vegetation composed of cacti and agaves of of every kind, the most spinous sorts naturally predominating. It is said that the goat can pass months without needing water, and furnishing milk all the time.

Swine.

Introduced soon after the discovery of Brazil, the Portuguese types still preserve their distinguishing marks. One kind is an enormous beast, nearly 6 feet in length, thick-skinned, short legged and snouted. It is known by the name canastião (big basket). Most English pigs are now found, as the Yorkshire, Berkshire, Hampshire, and Leicester, as well as others from Italy, Poland, etc. The food given to these animals, all over Brazil, consists of maize, mandioca, pumpkins, skimmed milk, etc., and as our hogs are let loose in the woods to eat the acorns, so their Brazilian brothers fatten on the fruit of the native pine, Araucaria Brasiliensis. The State of Rio Grande do Sul is the centre of the lard trade, having 11 factories, supplied with some 8,500 tons

of fat. Minas, Santa Catherina, Goyaz, and Rio Janeiro are other pig breeding states. Bacon, such as we know, is not cured, and a Portuguese once asked me what was that meat, with a piece of lean and a piece of fat, alternately, that they gave him for breakfast on the Royal Mail steamer. Brazilian bacon (toucinho) is nothing but a great mass of fat, three or four inches thick, with quite an unappetising look. To sum up, Amazonas is suited to oxen, but not to goats or pigs. Pará is, more or less, in the same conditions, and all the other states are well adapted to the introduction of almost any stock. Rio produced, in 1906, no less than 3,707 tons of milk, and 61 tons of cheese. Petropolis district being one of the richest. Santa Catherina, in 1905, already made 419 tons of butter, and Minas Geraes exported (principally to Rio) in 1907, 5,100 tons of milk, 4,635 tons of cheese, and 1,420 tons of butter, nearly all of this passing over one line of rails (The Central). All the milk was used in the Capital of the Republic. The total value of products of the pastoral industry, in this state, amounted to £2,891,599 in 1904, and has, undoubtedly, very much increased since then.

A great feature of Rio now is the dairies, where one may sit (as in a café), and drink milk, hot or cold, at about 1½d. a glass.

CHAPTER XVIII.

Geology and Mineralogy.

This section has been left almost to the last, the writer sacrificing his predilections to a sense of the relative importance of the subject. It is, however, a very fascinating one, and pity it is that it cannot be dealt with here in a more adequate manner. If we glance at the map of Brazil we find the whole country cut up as it were by great rivers, their basins being divided by long ranges of mountains, from 4 to 7,000 feet in altitude, and with a general trend north and south, except in what is known as the central plateau, where the serras run in all directions, having their meeting point where the head waters of the Parana and the great affluents of the Amazon, the Tocantins and Araguaya, and the São Francisco are not far distant from each other (as distance goes in Brazil). This latter river flows through a broad valley, with table land bluffs frequently 20 to 30 miles distant from its banks. It forms for three-quarters of its course the western boundary of the high lands, extending almost from the coast in two or three distinct ranges. In studying the geology of Brazil, we shall find, as far as its economic aspect is concerned, that this river plays (and will more) a very distinct part. The Guianas are entirely separated from the main ranges of Brazilian mountains, and this latter constitutes almost the whole of the continental highlands east of the Andean system. The mean elevation of the Brazilian massif is some 3,000 feet, and Itatiaiá reaches over 9,000 feet. The range that is visible all along the coast from Pernambuco to Rio

Grande do Sul is of composite character, mainly being constituted of gneiss, and other forms of granitic rocks. Itatiaiá being largely hornblende, and Tinguá (near Rio) said to possess rock formations peculiar to itself, including crystalline nodules called tinguaote, or tinquaite, to adopt an orthodox mineralogical termination.

Although this broken range contains some minerals, south of the Parahyba river, where it begins to pile up its highest masses; there is probably little of value, as we generally find that rocks of a distinct character such as granite undecomposed, are not productive of much mineral riches, unless quartz is a predominant factor. In reality this lower section of the coastal range, and known as the Serra do Mar, Organs, Estrella, etc., with a south-westerly tendency to the frontier of São Paulo, is a distinct mass or series of masses. Seen from the highest point of the spur near Petropolis, at over 7,000 feet, one has a clear view of hundreds of peaks all over the state, and can form a faint idea of the immensity of the mountain system of the country. Speaking broadly then, we will say that the geological formation of the whole of the State of Rio is more or less the same. Once across the Parahyba (or upper Tieté, in São Paulo State) we, after descending to 1,500 or 1,800 feet, rise again at the Serra da Mantiqueira, reaching a culminatory point (by rail) close to the City of Barbacena. Beyond the limit of the valleys of these two rivers, the coastal range comes in close contact with the Serra da Mantiqueira, and with other and less well defined ridges. In the section confronting the Parahyba river, this Serra attains its highest mean level of some 6,500 feet, and where the coast range approximates closely to it, we find Italiaiá or at the bottom of an elongated V. This mountain contains besides granite, gneiss hornblende,

syenites, tuffs and phonolites, characterising ancient volcanic centres.

The third principal range of mountains, known as the Espinhaço (backbone), becomes detached from the Serra da Mantiquiera in eastern Minas Geraes, and taking a northerly course, forms the eastern rim of the São Francisco basin. We have noted the course of the first two ranges, i.e., south-west and south-west, terminating with easterly and westerly spurs, the former marking the culminating point of Brazil.

The Espinhaço is noteworthy for the fact that the older crystalline rocks, gneiss and granite, are subordinate to a series of ancient metamorphic schists, quartzites and limestones, and to a newer series of sandstones, and conglomerates. The older crystalline and metamorphic rocks are sharply folded, and the newer series rests unconformably in gentler folds on their upturned edges, forming the peaks most predominant in the Espinhaço, reaching 6,000 to 7,000 feet. The metamorphic schists are rich in iron, manganese and gold ores, whilst the sandstone series is frequently diamondiferous. This itacolumite (or flexible sandstone) is characteristic of the districts of Diamantina, Grão Mogul and Minas Novas in the State of Minas Geraes, and of the districts of Sincora and Lençoes in Bahia. In the south, in Santa Catherina and some part of the Rio Grande, we find the carboniferous beds, and in Paraná, high sedimentary plains. The central massif is not as yet properly surveyed, whatever knowledge of it possessed, being limited to the immediate vicinity of the great rivers. The coffee zones of S. Paulo, Minas and Rio de Janeiro are characterised by a red earth derived from diabase types of rocks of eruptive origin. The plains in the region of the upper São Francisco consist principally

of sandstones and shales. From the Doce river (Espirito Santo) north, with occasional interruptions of the older rocks at Ilheos (Bahia), etc., we find a narrow strip of elevated sedimentary beds, as far as the mouth of the Amazon. The mean elevation of these hills is about 300 feet, and their highest point may attain 900 feet. For economical purposes we must limit ourselves as far as the present work is concerned to certain more or less well defined areas in the states of Minas, Goyaz, Matto Grosso and Bahia, and to the known occurrence of minerals in other states in isolated localities. The profitable working of such deposits (probably the richest in Brazil) as lie outside this region, is a question of the future, when means of communication are better than they are at present.

Mineral Deposits and Minerals.

In place of writing a long detailed description of the mineral resources of each state, an index of minerals with their mode of occurrence where possible, and localities is found below, and it will be found of far more practical use than generalising.

Agates. The best are found in Rio Grande do Sul, as rounded pebbles in the rivers. Every variety is encountered, including beautiful crocidolite (tiger eye), carnelians of the deepest hues, and onyx and sardonyx in abundance.

Amethysts. Found in many states, even within a few miles of Rio de Janeiro, in the decomposed rocks of granite base. Principally found in Bahia, Minas, Minas Novas and Rio Grande do Sul, where the great Drusy cavity was found by German agate seekers, 15 tons were taken out and exhibited at Dusseldorff in 1902, the crystals were an inch long, and of the finest violet

colour. This mass was found in the coastal range, at 2,000 feet above sea level. Amethysts are sometimes picked up at the mouth of rivers in Rio and São Paulo States, and a block was sent from Brazil to Calcutta which weighed 98 lbs. Amethysts have been found half violet half yellow.

Aquamarine (or blue beryl). Found in veins of coarse grained granite, penetrating gneiss at Vallongo near Rio de Janeiro. Abundant in some parts of the Arassuahy river and tributaries (N.E. Minas), where green specimens are found, rivalling the finest emeralds. The great centre is Minas Novas.

Asbestos. Very fine qualities found in many states. The best known locality is Taquaral (Ouro Preto) Minas Geraes.

Beryl (see Aquamarine). The best are found in the river beds in Minas, especially in the Arassuahy district. A blue one was found weighing 2 lbs., and a greenish-blue acquamarine of 15 lbs., and another of 13 lbs. Beryls are found of all possible colours, some perfectly colourless.

Chrysoberyl. Yellow-green to golden-yellow; principally in the Minas Novas district. Found in pebbles not larger than a bean, in auriferous clay or gravel, derived from weathered rocks, mostly in the Rivers Piauhy and Calhão.

Copper. In Rio Grande do Sul (Camaquam). Bahia (vicinity of São Francisco river) Maranhão, Ceará (in Minas de Pedra Verde), Santa Catherina, etc.

Chrome. Found in micaceous rocks at Congonhas do Campo, Ouro Preto (Minas).

Diamonds. Usually found in the river gravels in Minas Geraes (Abaete, Bagagem, Cocaes, Diamantina and Grão Mogul), and in Bahia in the Sincora and

Lençoes district, and at Salobro (46 kilometres from Cannaveiras in a low-lying land) two feet below a white clay decomposing soil, also in the Itapicurú river. In São Paulo in the rivers flowing into the Paraná, and in the State of Paraná associated with gold in the Yapo and Pitangru rivers (tributaries of the River Tibagy) in the Campos de Guarapuavas.

Also in Goyaz and Matto Grosso, nearly always with gold and other valuable minerals.

The most famous Brazilian diamonds are—

The Estrella do Sul (Bagagem) 254 carats.
The Dresden ... ... 177 ,,
Coroa de Portugal ... ... 120 ,,

One found last year (1908), at Dos Dourados (Minas), weighed nearly 18 ounces, and was of the first water.

Boart and carbonates are principally from the Paraguassú river and tributaries, João Amaro to source, in the Chapada Diamantina (Lençoes and Sincora district of Bahia).

Emery. In São Paulo, not more than 35 miles from the city of that name. The locality is called Matto do Paiol, and is reached by the Sorocabana railway. The matrix is a micaeous clayey schist in advanced decomposition, and surrounded by granitic and calcareous rocks. The mass contains at least 70 per cent. of grey-blue mineral, in lenticular blocks, some of which are more than two yards cubical.

Euclase. This rare gem is found at Boa Vista (near Ouro Preto), and at Minas Novas (Minas Geraes).

Coal. The total thickness of the narrow veins of coal found at Tuberã in Santa Catherina is about 10 feet. Its charãcter is midway between lignite and ordinary bituminous coal.

In Paraná there are small deposits, but of little com-

mercial value. The Santa Catherina coal is suitable for making briquettes and in part (perhaps more than half), may be used in the ordinary way, containing as it does less than 10 per cent. of ashes. This applies also to that from Rio Grande do Sul, a continuation in reality of the same seams.

Bismuth and Antimony. Bismuth is found in contact with gold at Forquim, and in Passagem de Marianna (Minas). Antimony in native state has been discovered in the valley of Itapirapuam in São Paulo. Stibnite is found in the auriferous deposits at Caethé and near the peak of Itabira do Campa.

Nickel.

Found in Santa Catherina.

Gold.

Until the nineteeth century gold was the principal and almost the only mineral mined in Brazil. Minas Geraes is the most important centre of the industry, although this state has been pretty well exploited. The principal mines in operation are those of Morro Velho (the deepest in South America, 4,250 feet), and Passagem (Marianna). The Morro Velho mine yields £25,000 of gold monthly, and the expenses are some £12,000. It is difficult to point to any particular locality as being worth prospecting, as the whole of the Espinhaço and its off-shoots is auriferous. Possibly the most promising speculation being placer mining by means of dredgers, and hydraulic sluicing of the high banks of gravel left by the old miners in many places. The River Doce (upper portion), Rio de Contas, Pardo, Paraguassu and Itapicurú, all falling into the sea between Espirito Santo and the São Francisco, are undoubtedly worth trying, as well as many of their tributaries. This applies to many rivers

in Goyaz and Matto Grosso, and to diamonds as well as gold. The minerals usually associated with gold and diamonds in the deeper gravels, as yet entirely untouched, are porphryies, chalcedony pebbles, black tourmalins, rutile, hœmatite, magnetite, emery, etc.

In spite of nearly 350 years of mining, hardly a month passes without some new find. At Montes Claros quite recently some nuggets were discovered weighing from 1 oz. to 1½ lbs. The latter was sold locally for £80 15s.

Garnet. Found in quartzose rocks, and in gneiss in Brazil, in almost all the states. Was formerly to be discovered on the beach quite close to Rio de Janeiro. Minas is the richest state in this crystal. At Minas Novas it is found in company with andalusite, cordierite, pink quartz and blue and white topaz, aquamarine amethysts and spinels (red and blue).

Hyacinth. (Really rubicelle), found at Minas Novas of a reddish-yellow tint.

Graphite. Abundant in Minas (near Ouro Preto) Marianna, Santa Barbara, etc. Found near the Jequitinhona river in veins varying from 19 to 40 inches thick, some masses weighing several hundred pounds. The percentage of carbon in this deposit varies from 50 per cent. to 85 per cent. Not worked at time of writing (December, 1908).

Palladium.

Encountered in the celebrated Gongo Socco mine, in oligiste (iron ore) rocks.

Iron and Manganese.

Iron is everywhere in Brazil. Near Itabira, in Minas, it forms veritable mountains of oligiste and hœmatite. Not worth while considering here, as it would take many pages merely to enumerate the localities where it exists

in workable quantities. Samples before me as I write present the appearance of pure metal, and contain not less than 90 per cent. of oxide. Manganese ores in Brazil average 45 per cent. of mineral of commercial value, but they are remarkably free from sulphur and phosphorous. Exportation reached the amount of 220,021 tons in 1907. There are two important mines now being worked, one near Queluz having a reserve of at least five million tons.

As freights are now, the expense of putting a ton on the European market amounts to about £2, and strong efforts are being made to induce the Central railway to lower its tariff 2s. 6d. per ton. An electric furnace has now been established at Government expense in Minas, for the purpose of treating the itabirites (iron ores). The cost was nearly £4,000.

Monazitic Sands.

These extend from the south of Bahia to Espirito Santo, and the whole of the exportation is in the hands of two contractors Mr. John Gordon, working the Prado deposit, and Herr Jsraelson (representative of a German house) with locations near by. Between these two concessions there are, however, other deposits as yet unworked. In 1907, the first shipped to Hamburg 7,515 tons, and the second 9,075 tons. There is a working agreement between the two, to fix the price at £5 15s. per cent. of oxide of thorium, and to divide sales. Thus the value per ton of sand is £28 15s. The stock in hand is, however, in excess of the present annual requirements.

Marble. Splended variegated and pure white marbles are found in many places in western Minas Geraes, and in Rio, São Paulo and other states small deposits are found.

Ochre. Red and yellow ochre is found abundantly near Ouro Preto, St. João de El'Rey, St. José de El'Rey and Prados, and most of the material extracted is used in Rio de Janeiro and São Paulo by local paint works.

Spinel and Balas Rubies. In the sands of the River Piuna (in Espirito Santo) many beautiful stones are found, frequently of a large size and perfect crystals.

They are found also in the Paragussú river near Machado Portella, accompanied by monazite and other minerals.

Sapphires.

In the sands of the River Doce, and in those of the Sapucahy-Mirim sapphires are found, and also in the diamondiferous sands of Salobro (Bahia), and in other rivers in the same vicinity.

Platinium.

Found in small quantities in many rivers of Matto Gross, Pernambuco, Minas, and Parahyba do Norte. In Minas Geraes it has been noted in the Abaeté, and its affluents, and in the district of Marianna.

Lead.

In Minas, galena is found in calcareos, or in quartz veins, and is almost always argentiferous. It occurs near Diamantina, Caethé, and Sete Lagôas, and Montes Claros, and in Abaeté. This latter deposit has been tested, and gave 40·25 per cent. of lead, with about 6 ozs. of silver, to 200 lbs. of metal. The richest sample yielding 8½ ozs. of silver, per 100 kilogrammes. It is also found in the State of São Paulo, in small quantities.

Mercury. Cinnabar is found near Ouro Preto, at Tripuhy, in masses, more or less crystalised.

Tin. Cassiterite is common in rolled fragments, in

many rivers in Minas, in company with tourmalines, especially in the district of Salinas.

Zinc. Sulphuret (or blende) in the granitic rocks of Parahybuna, and also with argentiferous galena in Abaeté.

Wolfram.

Encountered in Rio Grande do Sul, in the municipality of Encrusilhada. The veins are of quartz, from 12 to 20 inches thick. In the same veins are found copper sulphide, and monazite in the streams. The proportion of acid is 40 per cent.

Tourmalines.

Green tourmalines have been found in the Riberirão da Tolha, near the Chapada Diamantina, and fine blue, yellow, white, and pink gems are found at Minas Novas. All the north-east of Minas is noteworthy for the abundance of this crystal. A green one found at Larangeiras weighed *almost a pound*. Some are picked up with green ends and pink centres.

Topaz.

The yellow topaz is principally discovered in a short range of hills close to Ouro Preto, in itacolumite and clay-slate (killas), penetrated by decomposed schists and quartz veins. It is also to be found in Rio Grande do Sul. The pink and yellow variety is rare, and at Minas Novas the white kind, called by the name of the locality, or when rolled, pingos d' agua (drops of water). This stone is called, in Ceylon, matura roses, when cut rose fashion. At this place is also found the valuable indigo coloured topaz.

Rock Crystal.

Common in most of the states. In Minas it is abun-

dant in Congonhas do Campo. The finest and clearest is found, however, in the Serra dos Crystaes, close to the Goyaz boundary. Most of the exportation is by the city of Uberaba. Sete Lagôas and other places send small quantities to Rio de Janeiro.

Sulphur. Rio Grande do Norte (at Curraes Novos) is the only state where this mineral is found in any profusion.

Peat and brown coal (lignite). The first is abundant at Camamú, on the Marahú river (116 miles S.S.E. of Bahia). It is calculated that 400 kilos of combustible oil can be obtained from each ton of this deposit. There are two great fields of lignite in Minas, one at Gandarella, and the other in the basin of Fonseca.

The basin of Gandarella is ten leagues from Ouro Preto, and six from the station of Raposas (Central railway). The thickness of the mineral is about 18 feet, and it contains 40 per cent. of volatile matter, and 48 per cent. of fixed carbon. 100 kilos produce 22 cubic metres of gas. The second deposit named has never been properly examined, but its richness is somewhat less, having almost 18 per cent. of ashes.

Talc (or soap stone). Common in Ouro Preto, Santa Barbara, Marianna, etc. Many Brazilian churches have fonts and other ornamental vessels, and parts of their structure made of this stone, which is of an excellent variety.

Mica. Found all over Brazil. Goyaz produces the best quality, but mines exist in the State of Rio de Janeiro. The main difficulty in Brazil is the decomposition of the rocks, entailing cutting out to immense depths.

Amongst the precious stones, not as yet encountered in Brazil, must be enumerated the emerald, ruby,

alexandrite, moonstones, opals, torquoises, demantoid (green garnets), and some varieties of the sapphire.

Advices to hand from Bello Horizonte claim that a new and rich gold field has been found at Olho dé Agua, eight kilometres from Montes Claros (in Minas), and that the precious metal has been discovered to the value of £30,000. No fewer than 3,000 prospectors have left for the locality. Many recent finds of fine diamonds have been made, including one close to the habitation of a poor woman, who had no conception of its value. Bismuth has been found at Campo Alegre, in Minas also.

General Remarks.

Enough has been said to show that there is a good opening for Brazil in the diamond mining districts. Only a very small portion of the alluvium has been explored. Most of the river gravels (untouched at 20 to 50 feet below the surface of the water) contain enough gold to pay for dredging. One dredge, started in the Diamantina district, digs to a depth of 50 feet, and the buckets are able to cut into the bed rock (a soft sandstone) to four or five feet. The expense of running is £6 daily, handing 1,000 yards of gravel. Quoting from the statement of the operators, the affair is a great success. With regard to the new law of Bahia, the proprietor of mineral lands is obliged to work them, or submit to Government arbitration, with regard to their sale. No license is required to prospect with movable plant, and concessions may be readily obtained of reaches of public rivers, up to 50 kilometres. All diamondiferous soil being state property, no litigation can arise through the question of ownership. A license for placer work costs a few milreis only. To quote the British Consul at Bahia, the new regulations are well calculated

to encourage exploitation of this, the richest zone in Brazil. The laws seem to have been based on the best features of those elsewhere. The taxes payable are from ½% to 10%. In the case of monazitic sands they are very heavy, but the profits afford sufficient recompense for this impost. To sum up, most of the abandoned properties were discarded for want of sufficient capital, or were failures through bad management. Legislation has been effected to protect prospectors, and to guarantee to them the result of their labour. The climate is excellent, and quite suited to northern Europeans. Registration and survey is obligatory, and no one can now pretend to ownership of a claim who is not possessed of properly stamped documents.

There are (1909) some 66 British Mining Companies owning properties in Brazil, and the capital involved amounts to over £8,000,000.

CHAPTER XIX

Thermal Springs and Tourist Resorts.

Pará. Near the City of Monte Algere there are hot sulphur springs that have never been analysed or tapped.

Parahyba do Norte. At St. João do Rio do Peixe analysis has been taken of some waters lightly sulphurous, and with a temperature varying from 21·5 to 32·2 centigrade.

Ceará. Close to Tamboril there are acidified crystalline springs entirely unused. Another in the vicinity of Santa Quiteria has a temperature of 35° cent. The most important springs are at Coldas.

Pernambuco. Mineral waters are found at Pajehú de Flores.

Bahia. Close to Itapicurú, 220 kilometres from the capital of the state, there are thermal springs, with a temperature of 39° centigrade. They contain chloride of sodium, lime and magnesia, sulphate of soda and bicarbonate of soda, carbonate of lime and magnesia. Four parts out of five are of the first named. There are seven other hot springs of a similar nature in the vicinity of the above.

Rio de Janeiro. In Parahyba do Sul there is a mineral spring, classified between bicarbonates and ferruginous effervescent types. It is a proto-thermal fountain. It is under the name of Salutaris, and is prescribed by the local doctors for anæmia, dyspepsia, and female irregulari-

ties. In six years 49,307 boxes, of 48 small bottles, were sold in different parts of Brazil. In Santa Rita (Magé) there is a spring of water, very good indeed for affections of the liver and stomach. Of this, in the first three months of 1907, 43,930 bottles were sold.

Federal district (municipality, etc, of the capital of the Republic). Formerly there were many ferruginous springs (chalybites) in Cosme Velho, Theresa, Tijuca and Boa Vista da Gavea, but the growth of the city has, so to speak, swallowed them up.

São Paulo. In Tatuhy a spring furnishes 3,000 quarts in 24 hours. It is largely impregnated with carbonic acid and gas. In Santos there are several mineral springs, and in Campinas six of gaseous nature, as well as others in different parts of the state, as Leme, Rocinha, Mogy-Guassu.

Paraná. The hot springs of Xapecó are of sulphurous nature, and are mostly used for affections of the skin.

Santa Catherina. In this state at Pedras Grandes (Tubarao) there are waters with a temperature of 41° centigrade, and very valuable in cases of rheumatics, and contagious skin complaints. There are three other springs of a similar nature in the same state.

Rio Grande do Sul. The principal spring is at S. Gabriel, and consist of carbonates and iodurets of iron. Four parts out of seven are ferruginous.

Matto Grosso. From the granite, at a place called Frade, water gushes at 42° of heat, of a ferro-manganese nature, employed in cutaneous diseases.

Goyaz. In the Serra das Caldas there are three thermal springs, varying from 22° to 42° centigrade, of the same nature as the above. Experiments prove them to be minus acids or alkalis. They are frequented by persons suffering from rheumatics and skin complaints.

Minas Geraes.

Aguas Virtuosas de Caxambú. Caxambú is in the municipality of Baependy, situated about 2,800 feet above sea level. The mineral springs have been noted for a long time, and their reputation has increased so much that there is now quite a small town in the locality, with hotels, electric light, baths, etc. Nearly 100 persons are engaged in the bottling of water from five or six springs, others being used locally only for medical purposes.

The use of these waters cures indigestion and constipation, diabetes, etc. Character of fountains D. Pedro and Viotti. Gaseous acidulted waters like seltzer. Fountain D. Isabel more gaseous, and contains a large percentage of iron. Tonical Fonte D. Leopoldina. More alcaline and gaseous than the two first named. Fonte Intermittente, similar to D. Isabel, but more alcaline, and with less iron. Exportation, 1906, 20,917 boxes of 48 bottles. Aguas de S. Lourenco, altitude 2,800 feet, average temperature 12° to 16° centigrade. Gravel soil. There are two hotels. The springs are seven in number, very suitable for stomach complaints and dyspepsia. The exportation is not so great as that from Caxambú.

Lambary, 3½ leagues from Campanha. There are three springs. The most important one is gaseous, of carbonic acid type. Its temperature is 23° centigrade. There are 43 men employed at the place, which possesses an hydropathic establishment. Cambuquira, waters similar to those of Caxambú. The exportation from these two districts, in 1905, was 5,926 boxes, containing 48 bottles.

Aguas de Fervedouro (Carangola), nearly 2,000 feet

above sea level. There are four fountains, furnishing more than 600,000 litres in 24 hours. The water is reputed valuable in cases of paralysis, rheumatism, anæmia, scrofula, and other cutaneous and deeper seated diseases.

The most important bathing station is Poços de Caldas. These latter have been known since 1786, so they are in all probability the oldest frequented thermal springs in Brazil. There are two hydropathic establishments with four springs. Two are tapped with 42° cent., and one has a temperature of 45° cent., and the other 36° cent. The discharge of the four springs amounts to 416,372 litres daily. They are distinctly sulphurous. The concern is a large one, the loan raised to form the establishment amounting to no less than about £100,000. There is an hotel with 400 rooms, a casino, park, and athletic grounds. The whole is under the control of the State Government. The climate is splendid, as the place is situated at nearly 4,000 feet above sea level, on dry ground. In 1905, 28,502 baths were taken.

Poçinhos do Rio Verde (Caldas). Waters suitable for diseases of the liver, kidneys, etc.

Aguas Santas (near Mattosinhos) 2,700 feet altitude. Cold waters, arsenical and sulphurous.

Aguas sulfurosas alcalinas do Araxá. (The title describes fully the type of these warm springs, 26° to 27° centigrade). The waters are so strongly impregnated with alcaline properties that the rough loose skin of the hands peels off immediately on contact with the spring. The smell denotes their vicinity if out of sight. Araxá is delightfully situated, 2,800 feet above sea level, and the climate is perfection itself. Pulmonary diseases are absolutely unknown to the natives of the district. The colour of the water is violet, turning to green. The

springs are seven in number, and yield 3,600 litres of water daily. Dyspepsias and ordinary derangements of the digestive system disappear, as if by magic, after a few days use of these waters, which are equally suitable for bathing in and drinking. They are situated some little distance from the town. Medical researches lead to the opinion that these springs are superior to the most famous European ones, such as Carlsbad, Baden, Aix la Chapelle, etc.

TOURIST RESORTS.

To the healthy, Brazil offers as many (or more) inducements as to the ailing. No need for the idle tourist to spend a single night away from his hotel in Rio de Janeiro. Supposing he is domiciled at the Hotel dos Extrangeiros, or that of Miss Lenz, in Larangeiras (The Alexandra). From either, he can go by car, changing once or twice, to the Tijuca Mountain, and proceed in a comfortable carriage, or on a sturdy mule or horse, to the very peak, over 3,000 feet above the city. Here, hardly an hour from the very centre of Rio, he is in the midst of nature's mysteries. There is the Vista Chineza, and the furnas (ovens), a great pile of eroded boulders. There is the distant flat topped Gavea Mountains. Across yon blue bay, with its hundred wooded islands, chief of which are Governador, and lovely Paquetá, a green fringe comes out to meet the water, and behind, the sombre cloud capped ranges of the Estreila (left), and the Organs (right), north and north-east. Behind the Estrella is the lovely Tinguá, a mysterious solitary peak, evidently of different origin to its fellows, judging by its suspiciously volcanic like cone. Nearer the open sea, and somewhat

below, the Corcovado (hunchback) rears a mighty tower of rock. This mountain may be ascended by rack rail, to almost the last step, and is crowned by a band stand, looking curiously like a gigantic cap or umbrella. From the Alexandra Hotel we can gain the shelter of this covering in about three quarters of an hour at most. Cars pass our door, or we may walk a stone's throw to the railway station, presided over by an Englishman (or Anglo-Brazilian), who is stationmaster, etc., all in one. If we want sea-bathing, the Jardim Botanica electric cars again are at our service, running us out to Ipanemá in 30 minutes, or to Léme in less time. We shall find clean smooth sands, or if we prefer a rocky basin, a few minutes climb from the latter, and 20 minutes' walk from the latter, will bring us all the seclusion desirable.

The botanist and entomologist, or the geologist can revel in a feast of riches anywhere outside the city. Across to Nictheroy (the state capital), and a little beyond S. Dominqos or Icarahy we are in the wilds.

The best time to reach Brazil is in the winter, from June to September. Let us take our baggage and turn our attention towards the Queen of the Serras (Petropolis). Supposing we arrive by steamer, at Rio de Janeiro, in the early morning, and we are prudent enough not to be burdened with heavy luggage. We may get our goods and chattels cleared, and have done with customs' formalities before noon, if we elect to have late breakfast on board. I must go with you to be your guide, counsellor, and friend, for, of course, you are ignorant of the romantic and expressive language of Camões. Call a carregador (porter) and trundle our traps at about 3-30 p.m. to Prainha, where we take the boat. The construction of the electric railway is only

just started, so we cannot travel by that. We find ourselves on board the "Leopoldina" or "Petropolis," and encounter every creature comfort, including the evening newspapers (at double the shore price, by the way). Sharp to the minute, at 4 o'clock, we cast off, and once clear of the wharf, have time to notice the faces around us. Taken all in all, a hundred or two of distinctly superior people. Prosperous merchants, stockbrokers, officials, contractors, and engineers, with a sprinkling of the fair sex. The large man behind us is evidently a personage, and his importance may be judged by the most casual observer. There is a fat stolid ticket-puncher coming our way, invite him to mata bicho (kill the worm), and perhaps his tongue will loosen. There is the quiet grey little sad eyed Ambassador of Brazil at the Hague. Towering over him the impressive, looking Foreign Minister, and yonder his son, like an English life guard in stature, and an excellent counterfoil to the Japanese Minister, who is talking to the Italian Secretary, and the German Plenipotenciary (quite un-Teutonic in aspect) in most excellent English. About the political outlook——? no, lawn tennis.

Yonder group. Well of all things they are European Diplomats also, but their subject is the weather, and how cold it is. Quite fresh enough indeed, on the water, and an overcoat is not an encumbrance. Hark! A bell rings. Look ahead. The green fringe we saw in imagination from the steep slopes of Tijuca, is close to us in reality, and we speedily bring up alongside a jetty where a train is waiting. Take care of those white tickets with letters of the alphabet largely delieneated on them. They represent, if you please a reserved seat in a special car. A, B, C, D, etc., number so and so. There is hardly time given for everyone to take their

seats when we start off, gathering speed in the declining light, and by the time 5-35 p.m. is reached, we are at Raiz da Serra (foot of the range), and another engine takes us in hand, this time pushing up behind. If there happens to be a fair muster of passengers, the train goes up in sections of two or three cars each, and travellers in the hindmost one can see the others winding in and out, and finally taking the great curve which brings them out at the crest of the mountains. Some half-way up there is a little ramshackle station, a standing disgrace to the English Company owning the line. Here there is a large cotton mill, and quite a small village has sprung up around it. We are now at about 400 metres above our starting point (1,250 feet), and on our left a sheer wall of rock goes up more than 3,100 feet. Through the right hand window the Cabeça do Frade (Friar's head), a camel's hump, like a boss, seems really close to the top of the garge. It is a point presumed to have been triangulated, and it is quite 3,800 feet higher than our present station. At the summit of the line we are 2,600 feet above the sea, and at the beginning of civilisation again evidently, for here we see electric light, rows of chalets each side of the line, and at the station a few cabs and carriages. The engine is replaced by one of the ordinary type, and very few minutes suffice to bring us to Petropolis itself, between two and three miles further on.

In the gathering darkness we see the station full of people, and a crowd of vehicles, amongst which are two small open trams or 'buses, running without rails. The Pensão Central, our objective, is just across the road, and in this cosmopolitan caravanserai we can speak almost any European tongue and be understood. Unfortunately there is no longer an English hotel, but we can take our

choice of Italian, Brazilian or German, if we prefer another and cheaper one to that over the way. To our disgust, we must dress for dinner, if we choose the latter, or find ourselves out in the cold. The city has about 25,000 inhabitants, and it has developed from a summer resort to an industrial centre, as there are in its midst two silk mills, cotton and woollen mills, breweries, nail and cardboard works, an ice factory, and envelope and stocking factories. Hardly two hours from Rio, and when the electric line is finished it will be only 70 minutes' journey. The climate, however, is quite different, and we shall be glad of two or three blankets on our bed. There are many delightful excursions, one to Fazenda do Campos, two hours on horseback, where one can look down and see the great capital almost at our feet, as we can also at Alto da Serra, just beyond the railway by which we came up. Here we may see, in the early morning, the famous *mer de nuages*, with its snowy billows far below, breaking like waves against the serried cliffs, and passing between their broken walls like spindrift. Yonder in the middle distance, there are islands rising out of this sea of clouds. Queer pointed peaks lifting themselves above the reek. By mid-day all is gone, and only remains the dull leaden shroud, half hiding Rio in the background. Another time we can go by the Caminho dos Mineiros (the miner's road), to Caxambú, and leaving the dark depths of the reservoir away on our left, ascend by a mountain road to the summit of the pass (5,300 feet), and look down on the northern side of the bay, and at Magé and Piedad beyond, where starts the tiny line that creeps up the Serra to Theresopolis, the coming rival to Petropolis. Look across yon awe inspiring valley, there looms in front a tremendous mountain mass, with an assemblage of huge boulders at

its highest point. From where we stand it is inaccessible, but we shall succeed in reaching it another day. There is also the Fazenda Inglez, a famous picnic place, the Cérmerie Boisson, the Presidencia, the Cortiço, the top of that towering wall of rock, seen at Meio da Serra, and then there is Cascatinha (the little cascade), and Correias further along the line towards the interior. In short, there are enough excursions for a month, but whatever is missed, Itaiassú Pedra Assú, as it is called wrongly with its bi-lingual name, half Portuguese, half Guarani, certainly the Indian is more euphonious. We must leave our hotel well provided with blankets and creature comforts at 4 p.m., and take horse, or tramp to Pereira's, the last house, the veritable Ultima Thule. Here under the hospitable roof of this rosy, cheery old chap, we may sleep after our two to two-and-half hours' journey, as the morn must see us under way as soon as daylight permits, at 6 to 6-30 a.m. anyhow. At Pereira's we are about 1,100 metres above the sea, or 300 higher than the station at Petropolis. From this, if we are wise, we shall not attempt more than 100 metres rise per half hour, including rests, and so we shall come out at Isabeloca, (hollow or basin of Isabel), the daughter of Dom Pedro II., the last Emperor, in about four hours, and here we can rest, as we are suddenly free of the eternal forests, and find ourselves on a small wind swept ridge, or rim, with a drop away to nothing as it were before us, and a swamp to the left, and beyond it, the last and highest green slopes. Look down, where we stand, and see a tiny white cluster of houses representing Petropolis, and nearer still the winding road leading from the city to the sombre way by which we have ascended.

Everything is different here. That great sheet of water with its countless isles that frames Rio de Janeiro, is di-

minished, as if we had been looking through the wrong end of the telescope. The ocean looms large before us. We stand where man is made to feel his littleness. Sea, sky, and mountains combine here to exert a dominating influence over the human soul. Consider now the herbage at our feet. We left in the town a hundred forms of familiar flowers, roses, dahlias, magnolias, camellias, heliotrope, jasmine, cannas, hortensias, and the flaming branches of the bougainvillea, never to be forgotten. Ere we reached Pereira's, the last climbing fuchsias had been left behind, and the orchids, those mimics of the butterflies, have long since gone, or at any rate nearly all of them. In the dark depths of the forest we had hardly noticed the change, but now the ground is covered with a profusion of flowers we fail to find in the sub-tropical zone below. There are bulbs scattered here and there, hardly attached to the soil, and besides the amaryllides, many sorts of plants of an alpine character, and which, alas, would not live even if we were successful in transplanting their seed or roots to Petropolis. Breakfast despatched, we step out manfully, in Indian file, along a tiny path that has been worn by the tapirs on their way to the pool. Shortly we seem to be lost in a labyrinth of sword-grass tufts, reaching six and seven feet in height, and so toiling for an hour, we cross the little stream trickling through the further side of the swamp (a lake in February), and climb up the other side to the shelter of those boulders that form the Castello, or the Itaiassú (great stone) itself. Here we are 2,250 metres above Rio, or approximately 7,500 feet, and the height of the boulders may be 35 to 40 feet. One I measured, after a very dangerous and difficult climb, is 33 feet.

The altitude given is that taken by two compensated aneroid barometers, afterwards corrected. If possible to

climb up one of the higher boulders the pains are well repayed. Probably there is no such comprehensive view in Brazil, assuredly there is none so near the sea. Far as the eye can reach there are tumbled masses of hills, falling away to the distant valley of the Parahyba. To the northward there are isolated peaks and serras, marking here Novo Friburgo, and at the limit of vision, the vicinity of Cantagallo, where the gold mines formerly existed. We cannot catch a glimpse of Itatiaiá, for this monarch of all Brazilian mountains hides himself in the south-west, behind a tremendous *massif*. Here we must sleep, and the first thing to do is to collect fuel, a very scanty thing indeed, perhaps we shall find nothing but the feathery tops of the taquaril, a small cane, hardly as long as a walking stick. Then a pile of these same tops must go towards making our bed, and a wind screen of some sort thrown up, for the great boulders form a sort of funnel here. If we have completed our preparations to brave the elements, we may perhaps make a tour of our fortress, finding that it takes at least half an hour. Night comes on apace, and we boil our billy, and sit under the dark rock watching the moon rise, surely twice the size of the northern sphere, and as bright again. Now with the disappearance of the sun, rude boreas comes sweeping, and whistling through the crevices all around, blowing the ashes of our dying fire in every direction. Cover up well, and creep in close together as we may, one or other must need jump up now and then to replenish the blaze. Towards morning there is a thin film of ice over the pool which lies amidst the rocks. It is not, however, the temperature marked by the mercury that chills us. It is that bitter, piercing blast that comes sweeping across this exposed site, all the way from the Antarctic regions.

Sunrise sees a pair of shivering pilgrims, struggling to get up their circulation, and to stimulate the flagging energies of the fire. 9 a.m. soon arrives, and the homeward march must be begun. We go down naturally much quicker than we came up, and arrive at Pereira's by 2 p.m., where we lunch and rest, and take horse back to Petropolis. Unfortunately, although the Piabanha River winds through the town, and the Itamarity joins it ere it reaches Cascatinha, there is no fishing. The dyes from the factories have poisoned all the large fish that have not been destroyed by dynamite cartridges; so if we want any angling it will be necessary to travel some three or four leagues at least. There are, however, many rivers which contain abundance of finny life, and some, as the dourado, pirarucu, afford good sport. The seas swarm with a hundred different types of scaly monsters, and some amusement may be had, with rod and line, from the rocks near the Gavea (Rio de Janeiro).

We can take the train, when tired of Petropolis, to Itaipava, and from there amble gently into Theresopolis the same afternoon. Here there is less distraction. Only one hotel worth stopping at ("Hygeine,") and hardly anything to do but amuse ourselves by excursions amongst the mountains and woods. From here we join the iron road again, and afterwards the boat to Rio de Janeiro. If limited in time, we can come out to Rio by the Royal Mail steamer, leave her on the Monday morning, or Sunday night, go straight up to Petropolis, visit Itaiassú, etc., and leave for Theresopolis the following Monday, and remain there until Friday, arriving at Rio on that day. We have then $4\frac{1}{2}$ days left to make the acquaintance of the capital, as the steamer leaves on the following Wednesday afternoon. Otherwise inclined, a journey to Ouro Preto and Morro Velho to see the gold mines,

Bello Horizonte, and thence to São Paulo, and, if time permits, from Paranaguá to Curytyba and back, may fill up our time. To do justice to Brazil a month should be spent in Rio alone, adding at least from May to the beginning of October in the provinces, not forgetting the Iguassú falls (Paraná).

CHAPTER XX.

Science, Art, Literature, and Conclusion.

Science.

Santos Dumont needs no introduction to the readers of this work. Suffice it to say that he is a Mineiro, being born at Rio das Velhas (July, 1873). He is of French extraction, his father formerly owned the Dumont Coffee Plantations, the largest in the world.

Mello Marques, a naval officer, invented a submarine.

Rear-Admiral Huet Bacellar. Improvements in torpedo tubes, adopted by the Brazilian navy.

Landell de Moura. First inventor of the wireless telephone, and discoverer of improvements in the ordinary telephone.

Lieut. Radler de Aquino. New method of calculating speed of vessels by the pressure of water.

Ribeiro da Costa. Unsinkable boats, hydraulic turbine, and entirely new forms of steam engines.

Dr. Edwardo Claudio. A new propeller called Trochoide.

Oswaldo Faria. Transformer of alternative currents into positive ones, and a power regulator.

Dr. Vidal Brasil. Discovered the antidote for ophidic poisons, also anti-crotalic serum.

Barbosa Rodrigues (Diretor of Rio Botanical Gardens). Great works on Brazilian flora, and studies on the curare poison. (A list of his writings occupies a full crown octavo page).

Barão de Capanema. Inventor of formicides, wet carbonising process, explosives, etc.

Paulo de Frontin. Engineer of the Rio improvements, water supply, etc.

Chapot-Prevost, Baráo Pedro Alfonso, Baptista Sacerdo, Paes Leme are celebrated doctors of medicine.

Carlos Moreira. A prominent zoologist and icthyologist.

The above are only a few names, taken off hand from a great number of eminent Brazilian scientists. Their technical capacity is very largely evinced, almost every branch of science having a numerous and capable body of votaries and successful exponents. The School of Mines, at Ouro Preto, is responsible for the training of many clever engineers.

LITERATURE AND ART.

Ruy Barbosa must be given pride of place as a thinker and idealistic writer, and the author of literary works of uniform excellence. He has been a journalist, working on several Rio papers. His literary life began in 1874, with a monograph entitled, "Crime against industrial property," and a long series of important treatises, written at home and in exile. (Letters from England, 1896).

Amaro Cavalcanti. Was a professor of languages at 20 years of age. Is a famous political economist.

José Maria Da Silva Paranhos (Barão do Rio Branco). Foreign Minister. Of this master mind we have already written, in men of affairs, otherwise he would have undoubtedly headed this page. He is an Admirable Crichton, and that is all that need be said of him here.

Joaquim Nabuco. The polished classical scholar and brilliant orator. Another of the old school, graduating, like the Barão do Rio Branco, under the Empire, formerly Minister to England, and now Ambassador at Washington. Nabuco is not a very popular man, he is at times haughty and uncompromising, and such qualities do not commend themselves to the young Republicans. His books are full of that spirit of romantic melancholy which seems engendered by the atmosphere and vast brooding silences of Brazil; this minor key, that is sounded by the soft summer winds in the palm groves of the north, and the pine woods of the south. Nabuco is well interpreted in the phrase—"Defiance and contempt of the littleness and meanness of man." He has written, "The judgment of the Masses," which elevates us to-day and lowers us to-morrow, represents only the dust of the roads, "and tyranny had been revived in Brazil at the point of the same bayonets that had put it down."

Machado de Assis (1839-1908). Graduated from the printing form, and attained the first prize in the Academy, by sheer force of merit. He is called the prince of Brazilian literature. First a psychologist, the master of comedy, his literary luggage is great. Verses (1869) being succeeded by an *olla podrida* of material. His best known work is "Braz Cubas," a novel. His epitaph is best expressed by saying—He was a child of his own work, he owed what he was to his constant labour.

Mello Moraes (a Bahiano). One of the sweetest lyrical poets is, like most Brazilian writers of repute, many sided. The historian of the gypsies, the student of folk-lore, and the voice that cries out as a soul in the wilderness.

Assiz Brazil. Diplomat, agriculturalist, and economist. He has written on law, politics, and poetry, and excels in

all he attempts. He is a Mineiro, and one of the most brilliant sons of that state.

Graça Aranha (Dr.) Maranhão has the honour of being the birthplace of this gifted writer. He is a jurist, and has been charged with many most important international questions, but above all, he is a romancist and idealist. So far, the most important work from his pen is "Canaan," a sad yet fascinating story, breathing forth the subtile essence of the national character; a romance, yet a broken melody, a figure without an end. Translated into Spanish, German, and French, and existing in M.S. in English, although no British publisher has yet been found who has the *courage* to issue this great book. I say great, because it succeeds in enthralling the reader, of holding his attention captive, and thus fulfilling the mission of a true work of genius. This romance was written in London in 1902, whilst the author was first secretary of the special mission to England.

Medeiros e Albuquerque. He is the Didot of the Brazilian Academy; an encyclopedia in himself. Journalist, poet, and tale-teller. He was born in Recife, and it is no discredit to the south to say that the north is the cradle of Brazilian literature.

Affonso Celso—"The Catholic." A count of the Holy Roman Empire; meriting a title, if only by his literary work. He has translated, in verse, the masterpiece of Thomas a Kempis. A member of the Historical Institute and the Acadamy.

Coelho Nelto (Maranhense, like Dr. Graça Aranha). Suffice it to say that any one of his books would have made an author's reputation. Comedies, tragedies, librettos, criticisms, historical chronicles have poured forth from his pen since 1883, when his first work saw the light.

João Ribeiro. Is best known as a grammarian, having been responsible for several philological works. He has been editor of various newspapers in São Paulo and Rio de Janeiro.

Rocha Pombo. The leading historian of the younger generation. A journalist and novelist.

José Carlos Rodrigues. The Gordon-Bennet of South America. A self-made man. He is managing editor of *O Jornal do Commercio*, undoubtedly the greatest newspaper printed in the Portuguese language. Added to literary and linguistic ability, he possesses great business capacity, and has rendered the Republic enormous services. The *Journal of Commerce* is the doyen of the South American press. During the presence of the American fleet in January, and the British squadron in December, 1908, a large section of the paper was printed in English for the benefit of the visitors.

Alcindo Guanabara. Chief editor of *O Paiz*, a journal of marked intellectual force.

No list of literary giants would be complete without the name of Capistrano de Abreu. The greatest eulogy possible, is to say that this historian would have been famous in any land, and at any epoch. He is a native of the State of Ceará, born 1853, and his works include most exhaustive and minute studies of the colonial times, as well as translations from English, French, etc.

José Verissimo. Pará, 1857. The leading critic, justly feared and admired. An anthropologist, college professor and educational writer.

Amongst other romance writers, we may mention Nestor Victor, Aluizo Azevedo, Xavier Marques, Pires de Almeida, Inglez de Souza, *ad infinitum*. We must not, however, forget Madame Julia Lopes de Almeida, perhaps the leading woman writer in Brazil. She has

published "O livro das Noivas" (the brides book), "A Fallencia," and "A familia Medeirós," amongst other works.

The greatest playwright is Arthur Azevedo (Maranhão). Has written more than 40 plays, operas, and sketches, besides short stories.

Poets are well represented by Olavo Bilac, and the following will sufficiently express his style:

"Maldita Sejas."

Se por vinte annos, nesta furna escura
  Deixei dormir a minha maldição,
— Hoje, velha e cançada de amargura
  Minh alma se abrirá como um vulcão.
E em torrentes de colera e loucura
  Sobre a tua cabeça ferverão
Vinte annos de agonia e tortura
  Vinte annos de silencio e solidão.

Translation.

"Be thou Accursed."

If twenty years in this cavernous dark
  I have left my curses to lay asleep;
Now old and tired of bitterness sad,
  My soul like a volcano bursts forth from the deep;
And in torrents of anger, and madness the fire
  Pours forth scalding streams on thy head;
Twenty years of torture and agonised ire—
  Twenty years of silence and solitude.

Magalhaes de Azeredo, Augusto de Lima, Fontoura Xavier Lucio de Mendonça, Luiz Edmundo, Luiz

Guimares (has had his verses translated into Spanish, French, and Swedish). Raymundo Corrêa and Mucio Teixeira are other noteworthy poets.

Musicians.

Alberto Nepomuceno (Ceará). His *magnum opus* is "Artemis," an opera. Henrique Oswaldo, winner of the great international contest, organised by *Le Figaro*. His piece, "Il neige," taking the palm from 600 competitors. Meneleu Campos, Francisco Braga, and Dr. Abdon Milanez (a very popular composer), and Carlos de Mesquita head the list of musicians.

The Brazilian sculptor, *par excellence*, is Rudolpho Bernadelli. He has peopled the gardens and groves of his native land with beautiful marble forms. Corrêia Lima is a young and gifted pupil of Bernadelli, a fine group (Mater Dolorosa) coming from his hand.

The principal painters are Aurelio de Figueiredo (Paulo e Francesca), Rodolpho Amvedo (a Narração de Philetas), Antonio de Parreiras (a Derrubada), Rodolpho Chambelland, a Sahida do Baile (leaving the ball), Elyseu Visconte. J. Baptista and Henrique Bernadelli (Tarantella, Casas Brancas, Meditando, Syria).

Glancing at an "Anthologia Brasileira," of prose and verse, I find extracts from 155 writers, and it is safe to say that this number hardly represents the leading literary Brazilians. For a country, whose literary life hardly amounts to a couple of hundred years, the record, both of amount of work and quality of output, is a magnificent one. A most impressive feature of the history of literature in Brazil, is the fact that so many authors have suffered (even to death) for their principles, and that in nearly every case the work has been considered

before the workman. Power and preference has been sacrificed to the ideal, and the result is glorious traditions, and bright promise for the future.

Conclusion.

"Ordem e Progresso," the Brazilian motto, typifies the policy of the nation to-day. Her conquests have been won by arbitration, in place of war. She has settled almost all her frontier questions, and is able to turn her attention to internal development, and this is proceeding at a pace almost inconceivable. The iron horse is stalking over the land. There is not a state that does not feel the breath of life stirring its pulses, awakening it from slumber, and impelling it forward. Avante! (forward) is the word everywhere. Where Burton, St. Hilaire, and other voyageurs disturbed the silence of the virgin forests, the screech of the locomotive is heard. The advance guards of civilisation are even now passing the frontiers of Goyaz and Matto Grosso, and soon the railroad will reach the most distant and isolated parts of the Republic. Rio has arisen like a Phœnix from the ruins created, not by disaster, but by the house breaker. To quote Admiral Sir Percy Scott, in his farewell message to the Brazilians. In the near future Rio de Janeiro will be the most beautiful city in the world. Space will not permit me to tell of its marvels. It is not "see Naples and die," but see Rio and wish never to leave it. And the capital is only a gem in the most exquisite setting, surrounded by clusters of others, if less radiant and glorious, still entirely worthy of being satellites to the "Queen of Brazil," "A Carioca, na bahia da Guanabara." I cannot tell which I prefer, Brazil or the Brazilians, at least those who belong to the only aristo-

cracy worth anything, that of intellect. I regret only the paucity of detail and incompleteness of the information, which I have compiled. This is due more to lack of space than failure of material.

J. C. OAKENFULL.

Plymouth, England, April, 1909.

APPENDIX.

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Evening Papers. *A Tribuna, A Noticia*, and *O Seculo.*

Weekly. *Brazilian Review* (English). A commercial and industrial journal.

In French. *L'Etoile du Sul* (Rio) and *The Messager de S. Paul* (São Paulo).

Many German papers, especially in the south, and *Fanfulla* (Italian) in São Paulo. Also papers in Syrian, Spanish, etc.

In the Provinces there are many important papers, but space will not permit me to mention more than *O Estado de Sao Paulo.*

In Paris there are *France-Brésil* (monthly) and *Le Courrier du Brésil* (weekly). In London the *South American Journal* (weekly) has a page or two, regularly, on Brazilian affairs.

The Government organ, printed by the Imprensa National, is the *Diario Oficial* (Official Daily, Rio). There ought to be scope for a newspaper, exclusively devoted to Brazilian affairs, to be published in London, and as yet there is no Brazilian *daily* printed in English.

The British Foreign Office publishes annual and special reports from its consuls in Brazil. These may be had through Wyman & Son, and cost from 1½d. each.

The United States Government issues a far greater number. The subscription is annual—Office, Department of Commerce and Labor, Bureau of Manufacturers, Washington, D.C., U.S.A.

Propaganda in Europe.

The São Paulo Government has an office at 99, Place de Meir, Antwerp.

The Federal Government's Head Office is at 28, Boulevard des Italiens, Paris (first floor), and there are delegations and official agents at:—

Berne. Dr. Abdon Milavez.

Berlin. Meinekerstrasse 18, Dr. H. Heilborn.

Vienna. Baumannstrasse 8, Dr. J. B. da Cunha.

Rome. Modern Hotel, Dr. Francisco Canella.

Antwerp. Rue Leys 12, Dr. B. Dinard de Araujo.

Barcelona. Plaza Urquinaona 1, Senhor D. Carlos B. da Silva.

Marseilles. Rue du Paradis 87, Senhor Francisco Guimarães

Oporto. Brazilian Consulate, Senhor Francisco Jacob.

London. H. Hermes de Vasconcellos.

Havre. Rue St. Quentin 82, Senhor Symphronio Magalhães.

Plymouth. 31, Chestnut Road, Peverell (The writer).

The High Commissioner at Paris is Dr. Luiz Raphael Vieira Souto.

Forthcoming Events.

Fourth Latin American Medical Congress, Rio, August-September, 1909. In connection an International Exhibition will be held.

International Exhibition of Agricultural Machinery at Pará (permanent), opening in June, 1909.

PLYMOUTH :

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